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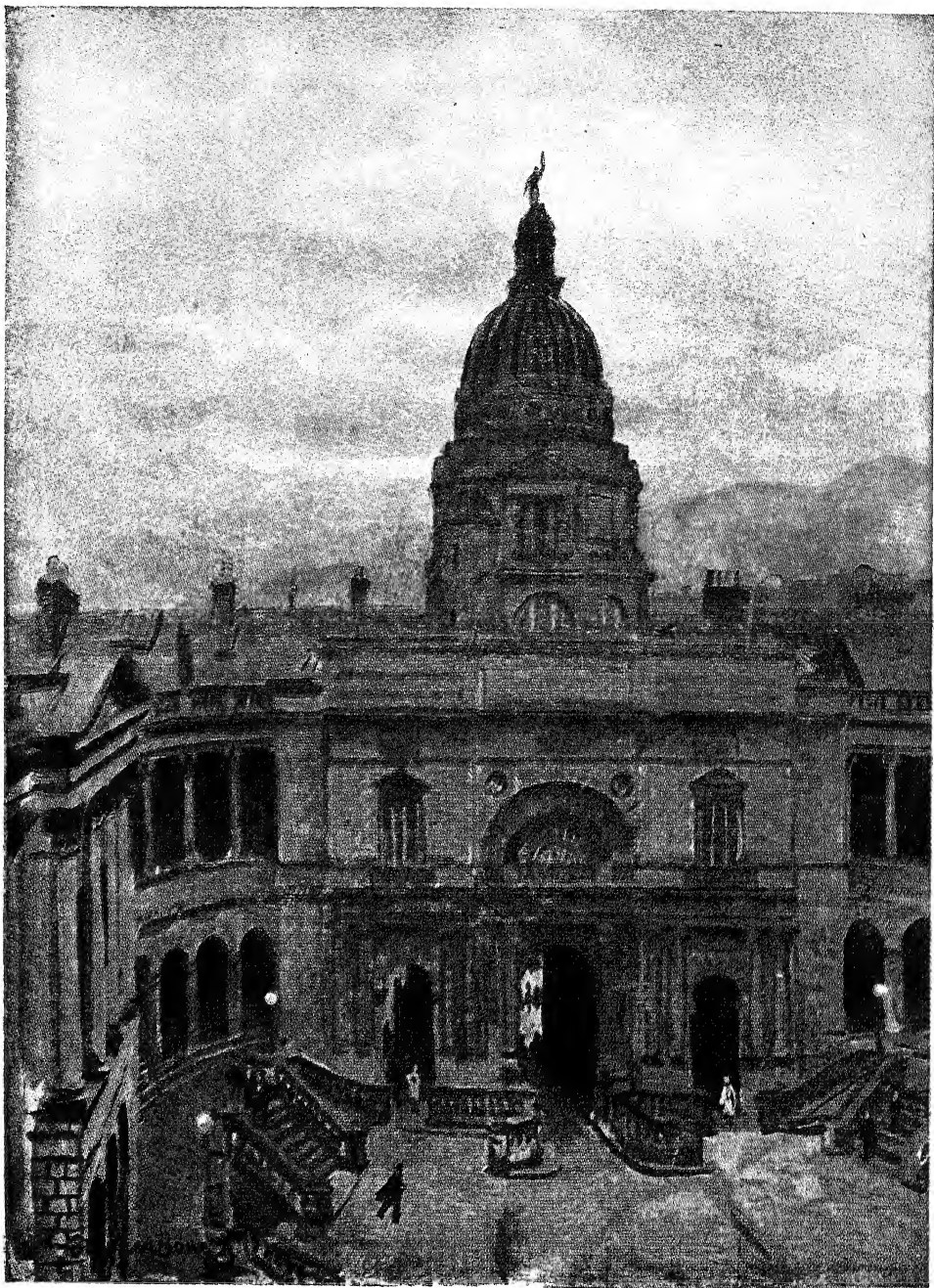
The New  
**UNIVERSAL**  
Encyclopedia



**Volume 7**

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*Specially painted for the New Universal by Stephen Bone*

**E**DINBURGH UNIVERSITY, founded 1583, is the youngest of the four Scottish universities. The present buildings were begun in 1789. The dome, added in 1884 as a tercentenary memorial, is crowned by a figure representing Youth holding aloft the Torch of Learning.

# The New UNIVERSAL Encyclopedia

*Edited by*

**Sir John Hammerton**

*Editor of The Universal History of the World,  
The Second Great War, etc.*

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**LOGI—NORI**



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**Logia** (Gr., sayings). The name given to an ancient collection of the discourses of Our Lord. According to Papias, probably a disciple of S. John, "Matthew composed the logia of the Lord in the Hebrew tongue." Hence the name is sometimes given to the supposed document, consisting largely of discourses, drawn upon, through a Greek translation, by the writers of the Gospels according to S. Matthew and S. Luke, and designated Q. (See Gospels.)

The name logia is also given to several fragmentary collections, professing to be sayings of Jesus, on 3rd cent. papyri, found in Egypt by Grenfell and Hunt in 1897 and 1903. They have been published as Sayings of Our Lord from an Early Greek Papyrus, 1897, and New Sayings of Jesus and Fragment of a Lost Gospel, 1904. Whether authentic or not, they preserve an early tradition.

**Logic** (Gr. *logos*, word). The science of reasoning. Logic deals systematically with the principles which regulate valid thought, that is, thought of which the conclusions are justified by the facts given. Logic does not itself provide new knowledge, as, say, chemistry may do, but furnishes a set of rules that help a man to gain new knowledge, to judge whether any given evidence is sufficient to prove a given statement, and to perceive what additional statements can justifiably be inferred from any given statements. For this reason logic has also been called the science of proof and the study of the general conditions of valid inference.

A knowledge of logic will not prevent anyone from coming to wrong conclusions, any more than a knowledge of hygiene will prevent the formation of unhealthy habits; but it does furnish a means of testing conclusions on any matter and the processes of argument by which they have been derived. Practice in logical analysis should enable anyone to perceive more easily fallacies hidden in the arguments and conclusions of others. The study of logic should assist correct thinking, as the study of grammar should assist correct speech. There were clear thinkers before there were logicians—otherwise the rules of logic could not have been formulated; but everyone should be a better thinker and a better judge of the conclusions of others if he is practised in logical analysis. A knowledge of logic cannot confer infallibility—it should not be forgotten that the greatest logicians of an-

# Volume 7

cient and medieval times believed and could "prove," for example, that the sun moved round the earth and that the earth was flat. But logic can provide an instrument for checking conclusions, and can focus attention on the various sources of error, so that the logician has really no excuse for believing that he is infallible.

The subject-matter of logic is usually presented in two parts, formal logic and inductive logic or scientific method. The first of these is concerned primarily with deductive reasoning, which assumes the truth of certain statements (or premises, that is, things placed before), and deduces conclusions from them, that is, uses them to formulate other statements implied by them. Inductive reasoning, on the other hand, starts with observed facts and tries to discover what general principles (or laws) underlie and explain them. A lawyer interpreting a statute and applying it to a particular case uses the deductive method; a scientist observing an experiment and interpreting the results uses principally the inductive method. In most forms of practical thinking induction and deduction are combined freely. In the study of logic it is convenient to treat them separately.

**FORMAL LOGIC.** This analyses the different types of proposition and the various ways in which inferences can be validly made from them. Every proposition has a subject and a predicate. Thus in "The furniture in this room is worth £150," the subject is "the furniture in this room": the predicate is "(something) worth £150." The subject and the predicate are called the terms of the proposition. A statement may be made concerning one thing or one group of things; e.g., *This cup of tea is strong*; *The furniture in this room is insured*. The proposition is then said to be singular. Or a statement may relate to any and every object of a certain class; e.g., *Armchairs are comfortable*:

*No man is infallible*. Such propositions are called general. The subject term is said to be distributed. A third type of proposition uses the subject indefinitely; e.g., *Some houses have been rebuilt*. These propositions are called particular.

Using S to denote the subject-term and P to denote the predicate term, we can classify the simplest forms of proposition as (1) All or every S is P; (2) Some S is P; (3) All and every S is not P; (4) Some S is not P. Of these four types, the first two *Affirm* something of the subject; the second two *deny* (Latin *nEgo*) something of the subject; the four types are therefore commonly referred to respectively as A, I, E, O propositions. Much of formal logic deals with the limitations on the use of these four types of proposition. They are commonly denoted by the symbols SaP, SiP, SeP, SoP.

Two assumptions essential to consistent thinking are known as the law of contradiction and the law of the excluded middle. According to the first, the same predicate cannot be both affirmed and denied of the same subject (S cannot be both P and not P). According to the second, a given predicate must be either affirmed or denied of a given subject (S must be either P or not P; there is no middle course).

Different immediate inferences are implied in the A, I, E, O propositions. Thus: SaP implies SiP but denies SeP and SoP; that is, if every S is P, some S must be P, and it is false to say that no S is P or some S is not P. On the other hand, SiP does not itself imply SaP, although SaP may also be true; and SiP excludes SeP but it neither affirms nor denies SoP. These relationships of the four types of proposition are systematically summarised in the traditional square of opposition. A proposition may imply also (a) its converse or (b) its obverse. Thus: the proposition, *The greatest side of a triangle is opposite to the greatest angle* has the converse, *The greatest angle of a triangle is opposite to the greatest side*, and the obverse, *The greatest side of a triangle is not opposite to the least angle*.

**SYLLOGISM** Mediate inference involves the use of two propositions containing a common term to derive a new proposition, the truth of which follows as a necessary consequence. Thus:

Educated people are tolerant;  
He is educated;  
Therefore, he is tolerant.

Such an inference is usually called a syllogism. The derived proposition is called the conclusion. The predicate of the conclusion (denoted by P) is called the major term. The subject of the conclusion (S) is called the minor term. The term appearing in both premises but not in the conclusion is called the middle term (M). Thus in the example we have: Major term, *tolerant (persons)*; minor term, *he*; middle term, *educated people*. The syllogism could be symbolised thus:

(Major Premise) MaP;

(Minor Premise) SaM;

(Conclusion) SaP.

The A, I, E, O propositions can be combined to yield nineteen different types or moods of valid syllogism. The scholastic logicians of medieval times concerned themselves principally with these forms of syllogism and devised elaborate rules and mnemonics regarding the different moods. The following two general rules of the syllogism are important: (1) The middle term must be distributed at least once in the premises. (2) No term may be distributed in the conclusion if it is not distributed in its premise. A fallacy is an invalid inference; e.g., Educated people are tolerant; he is tolerant; therefore he is educated. This is an example of the fallacy of the undistributed middle term. The word *tolerant* in neither premise denotes all and every tolerant person.

#### Chains of Reasoning

A chain of reasoning consists of syllogisms so linked that the conclusion of one is used as the premise of another. For example: Educated people are tolerant; he is educated; therefore, he is tolerant. Tolerant persons are good workmates; he is tolerant; therefore, he is a good workmate. No good workmate would tell tales of his fellows; he is a good workmate; therefore, he would not tell tales. Such syllogistic chains of reasoning have usually to be disentangled by analysis of the words used. Thus, that just given might have been expressed as follows: He would not tell tales, for like all educated people he is tolerant, and therefore a good workmate, and hence incapable of tale-bearing. The chief function of formal logic is to analyse chains of reasoning in order to decide whether the syllogisms are valid and to express the premises fully so that they can be adequately considered.

**SCIENTIFIC METHOD.** Inductive logic deals with the methods by which new knowledge can be gained.

Observation and experiment provide the raw materials of facts. These can be critically examined, analysed, classified, and grouped, described, compared, contrasted, and considered imaginatively in order to discern common factors, similarities, differences, or causal relationships; suppositions or hypotheses can be formulated to explain tentatively what has been observed; these suppositions can be checked by seeing if they apply equally to other observations of the same kind; they can be corrected and re-checked; eventually a generalisation or scientific law can be formulated that fits the evidence beyond all doubt.

#### The Place of Statistical Analysis

During this century remarkable progress has been made in the technique of accurate observation, in the design and conduct of experiment, and in the analysis of the results of observation and experiment. The analysis is usually mathematical and statistical in character, whether the observations concern, say, astronomy, physics, agriculture, sociology, engineering, or dietetics. But the mastery of statistical method is no substitute for the constructive imagination that can perceive that a problem exists, determine the kind of observation or experiment that may provide the requisite evidence, and then recognize the significance of the results secured, either with or without the aid of statistical analysis.

H. WATSON

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**Logistics.** Military term, originally coined to denote the art of moving and quartering armed forces. The French term *logistique*, of which it is a rendering, was first used by the military writer Jomini, and is derived from *loger*, to lodge. The word is now obsolete in Great Britain and on the Continent, but is still current in the U.S. army, covering roughly those aspects of the duties of "Q" branch, supplies, transport, and quartering, which are concerned with keeping an army mobile and ready to fight. Thus, a force unable to send forward enough ammunition for its artillery would be described as "logistically unsound." See Staff.

**Logogram** (Gr. *logos*, word; *gramma*, letter). A symbol or type sign used to represent a word or the termination of a word, for the sake of brevity and speed in writing, e.g. / for "the." Logogram is also the name given to a puzzle in verse. A word is chosen, and from its constituent letters words are made, synonyms of which are introduced into the verse, and from these the original word has to be guessed. Thus, if the word exhaustion were chosen, from which the words haste, heat, stone, etc., can be made, synonyms such as speed, warmth, pebble, would be introduced into the lines, giving clues from which the word exhaustion could be discovered.

**Logone.** A river and native state of Africa. The river rises in French Cameroons, and forms the boundary between that colony and French Equatorial Africa. It runs N.N.W. from the neighbourhood of Bakassi to its confluence with the Shari, just below Fort Lamby. The Logone is navigable for launches as far as Ham, whence there is portage and water communication with the Benue.

Formerly a vassal state of Bornu, the state of Logone now forms part of Cameroons. The country is swampy. The native capital is at Birni Logone, but the administrative centre is Küsseri, a few miles above the confluence of the Logone and the Shari.

**Logos** (Gr., word). Greek term much used in philosophy and theology. In philosophy it implies either reason or reason as expressed in speech; in the Jewish and Christian religions, the Word or medium of divine revelation. Heraclitus, Plato, and the Stoic philosophers attributed the rational order of the world to a divine Logos, Reason, or Mind. The Hebrew-speaking Jews used the word Memra in the sense that the Greeks used Logos, and in the Targums, or Aramaic paraphrases of the O.T., speak not of Jehovah, but of His Memra as manifested to Abraham, Hagar, Jacob, and Moses.

Combining Greek philosophy with Jewish thought and tradition, St. John, in the beginning of his Gospel, defines a Christian doctrine of the Logos, referring to Christ as (1) the inward Word of God, i.e. as much one with God the Father as reason is one with reasoning man; and (2) as God's outward Word, because he explains and reveals to the world what God is, and, by becoming flesh, and living a sinless human life, showed man how to become like God. In the

words of S. Augustine "the Son is called the Word of God because the Father made known His Will by Him, as a man makes known his mind by words."

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**Logotype.** In printing, two or more letters, a word, or a phrase cast as one piece of type, e.g. er, of, in, on, ed, the, tion. It should be distinguished from a ligature, which consists of two or more connected letters, like ff or æ. Logotypes have not been used extensively except by John Walter, founder of The Times, and early in the 19th century by Earl Stanhope. They are used in the setting up of work involving numerous repetitions of the same sequence of letters, as in directories and dictionaries. Logotypes reduce the number of hand movements to be made by the operator in picking up type or depressing keys. On the other hand, they increase the number of compartments in a case of type or keys on a keyboard to be memorised by the compositor. Also damage to any one character of a logotype necessitates replacement of the whole combination.

**Logroño.** Small inland province of N. Spain. It is bounded N. by the river Ebro, and lies mostly within its basin. To the S.W. lie the Sierra de la Demanda, alt. 7,562 ft., and the Pico de Urbión, 7,388 ft. The fertile region S. of the Ebro, known as La Rioja, is famous for its red wines. Logroño also produces cereals, olive oil, fruit, flax, honey, and silk. There are some minerals, including silver, copper, and lead. Area, 1,946 sq. m. Pop. 231,335.

**Logroño.** A town of Spain, capital of the prov. of Logroño. It crowns a hill 1,200 ft. above the fertile plain of the river Ebro, 61 m. E. of Burgos, on the Saragossa-Miranda de Ebro rly. The Ebro is here spanned by two bridges—one built of stone in 1138, the other modern. The town is walled, and its church is said to have been founded by Constantine. The centre of La Rioja district, Logroño has a large trade in wine and fruit. Named by the Romans Julia Briga and afterwards Lucronia, it was besieged by the French in 1521 and occupied by them 1808-13. Pop. est. 54,365.

**Logwood.** The heart wood of a tree, *Haematoxylon campech-*

*ianum*, a native of the warmer parts of S. America and the W. Indies. It was first imported to Europe by the Spaniards in the 16th century; about 1715 trade was developed with Jamaica, whence some of the best grades now come. Its value depends



Logwood. Foliage and flowers of this American evergreen tree

upon the presence of a colouring principle, haematoxylin, which is readily oxidised to a red dye, haematein. This is extracted and used in large quantities for dyeing wool and silk, generally with a chromium or an iron mordant. Leather, rayon, and other materials are also dyed with logwood. The extract is prepared near the plantations in Jamaica, where the wood is reduced to chips and extracted with hot water. *Consult* Natural Organic Colouring Matters, A. G. Perkin and A. E. Everest, 1918.

**Loharu.** Former state of India, now merged in Punjab. It was ruled by a nawab who traced his descent from a Mokhara Mogul serving under the emperor Ahmad Shah. Lord Lake granted a perpetual estate to the nawab, but trouble occurred in the latter's relations with the East India Company and in his own family. In 1874 the British government revived the title of nawab in favour of Ala-ud-din Ahmad Khan. Though the ruler was a Muslim, 86 p.c. of the pop. of 30,000 were Hindus. The capital was Loharu. Area, 226 sq. m.

**Lohengrin** (i.e. Garin of Lorraine). In medieval German romance, one of the heroes of the Grail cycle. He is the subject of a High German poem, composed c. 1300, in continuation of Wolfram's Parsifal. The son of Parsifal, and a knight of the Holy Grail, he is conveyed by a swan through the air at King Arthur's command to rescue Elsa, daughter of the duke of Brabant. Overcoming her enemy, he marries Elsa, who is not to inquire of him as to his

origin. She persists in doing so, and when he is persuaded to tell her the swan carries him away again to the Grail. Wagner took this legend as theme for his opera, Lohengrin, 1848. *See* Wagner.

**Lohmann, GEORGE ALFRED** (1865-1901). English cricketer. Born June 2, 1865, he became at 20 one of the most successful bowlers of the day, and a mainstay of the Surrey team. During 1885-90 he was indispensable to any representative English eleven. He took over 200 wickets in first-class matches in each season, 1888-90, his averages being 10-90, 13-43, and 13-62 runs. He played in nine test matches against Australia, securing his wickets at an average cost of 13-01 runs apiece. Lohmann died Dec. 1, 1901.

**Löhr, HERMANN** (1871-1943). A British song writer. Born at Plymouth, son of a theatrical conductor, he studied at the Royal Academy of Music, where he gained the Charles Lucas medal for composition. He wrote more than 200 songs and ballads, the best known being *My Little Grey Home in the West*, popular with the troops and much parodied by them during the First Great War; and *Where my Caravan has Rested*, of which a million copies were sold. He died Dec. 6, 1943.

**Löhr, MARIE** (b. 1890). Australian actress. Born at Sydney, July 28, 1890, she first appeared on the London stage in Shock-Headed Peter, 1901. Engaged by the Kendals in 1907, she made her reputation in the comedy, *My Wife, at the Haymarket Theatre*. Then she appeared with Tree at His Majesty's, and in 1911 with Hare. Manager of the Globe Theatre, 1918-25, she produced and acted in such successes as *Nurse Benson*; *The Laughing Lady*; *Aren't We All?* Later came *The Breadwinner*, 1931; *Call it a Day*, 1935; *Quiet Wedding*, 1938; *Playbill*, 1948. In films from 1932, she displayed adroit sophisticated humour.



Marie Löhr, Australian actress

**Loir.** River of France. It rises in the dept. of Eure-et-Loir and flows generally S.W. to fall into the Sarthe near Angers. Its length is about 180 m.

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W. into the Atlantic, which it enters at St. Nazaire. The longest river in France, it flows some 610 m. through much picturesque scenery, and on its banks are Orléans, Blois, Tours, Angers, and Nantes. On the S. or left bank its chief tributaries are the Allier, Cher, Indre, and Vienne; on the right they include the Maine. The river drains nearly 50,000 sq. m.

The Loire is not a great commercial highway, as its flow is much too irregular, rising at times with great rapidity and flooding the country. For small vessels it is at times navigable for a great part of its course, but for safety there are a number of canals. Some of these have been cut parallel to the river, which they rejoin; others, like the Canal du Centre, connect the Loire with other rivers. Attempts have been made to lessen the destructive Loire floods. Dykes and embankments have been built, and there are several dams, notably the great one near Roanne.

On June 14, 1940, German troops occupied Paris and, advancing S., reached the Loire S. of Avallon two days later. On June 17 Orléans was captured by the Germans, who crossed the river. In 1944 U.S. armoured columns reached the Loire at Nantes and Angers on Aug. 9, and turning E. advanced on Paris. American patrols crossed the Loire on Aug. 11.

**Loire.** Department of France. It is in the E. centre of the country, and takes its name from the above river. It is largely a hilly district, containing part of the Cévennes range, although it also contains the plains of Forez and Roanne. Its chief rivers, besides the Loire, are the Lignon du Nord, the Gier, the Aix, and the Ondaine, while the Rhône just touches it. In the N. it is an agricultural district, cattle being reared, and wheat and rye grown. In the S. is a large coalfield, on which are the manufacturing towns, of which St. Étienne is centre. St. Étienne is the capital and the head of one of the three arrondissements; Roanne and Montbrison of the two others. Before the Revolution the department was included in the province of Lyonnais. Area 1,852 sq. m. Pop. 631,594.

**Loire Inférieure.** Department of France. It is in the W. of the country, the Bay of Biscay forming its W. boundary. It is a generally flat and marshy district, subject to floods and drained by the Loire and its tributaries, the Erdre,

the Sèvre, and others. A number of canals flow through it. This is a fine agricultural region and yields heavy crops of cereals, while horses and cattle are reared, and dairy farming is carried on. Salt is extracted from the marshes, granite is quarried, and there are fisheries off the coast. The department is divided into five arrondissements. Nantes is the capital; other large towns are St. Nazaire and Châteaubriant. Guérande, Clisson, and Paimboeuf are interesting towns. In the S. is the large lake of Grand-lieu. Until the Revolution the department was in the province of Brittany. Area, 2,693 sq. m. Pop. 665,064.

**Loiret.** Department of France. In the centre of the country, it takes its name from a small tributary of the Loire. The Loire itself flows through this dept., as do the Essonne and the Loing. The dept. is mainly plain or plateau. It contains part of the wheat growing district called the Beauce, the Gâtinais, and a section of the infertile plain known as the Sologne. Cattle, sheep, and other livestock are abundant, and corn is grown; the vine is cultivated, and a large area is covered by forest. Orléans is the capital, and there are four arrondissements—Orléans, Gien, Montargis, and Pithiviers. Most of Loiret was formerly included in the province of Orléanais. Area, 2,629 sq. m. Pop. 346,918.



Loja, Ecuador. Main street of the town of Loja, capital of the province

**Loir-et-Cher.** Department of France. It takes its name from two rivers that flow through it. The Loire also flows across it, while other streams are the Sauldre and the Beuvron. The dept. is mainly plain or plateau. It contains part

of the Sologne, and the Beauce, and the district known as the Perche. Wheat and oats are grown, cattle and sheep are reared, and the vine is cultivated. There are also considerable forests. Blois is the capital and the head of an arrondissement; the other two are those of Romorantin and Vendôme. Before the Revolution the dept. was mainly included in Orléanais. Area, 2,478 sq. m. Pop. 242,419.

**Loisy, ALFRED FIRMIN** (1857–1940). French theologian. Born in Lorraine, Feb. 28, 1857, he was ordained priest 1879, and became professor of Biblical exegesis in Paris, 1881; chaplain of the Dominican College at Neuilly, 1894; and director of classics at the Sorbonne, 1900, resigning 1903 upon adverse criticism from Rome. Loisy helped to forward the modernist movement in the R.C. Church, urging that the Church could fulfil its mission in the world by accepting higher criticism and the comparative study of religions. His *Évangiles Synoptiques*, 1907, suggesting that the Gospels failed to give an historical record, brought about his excommunication. Yet he was appointed to a chair in ecclesiastical history at the Collège de France, 1909–32. He wrote *L'Évangile et l'Église*, 1902; *La Religion d'Israël*, 1908; *La Morale Humaine*, 1923. He died June 1, 1940. A study by M. D. Petre appeared in 1944.



A. F. Loisy, French theologian

**Loja.** Southernmost province of Ecuador, S. America. It is bounded S., E., and W., by Peru, and is traversed by the Andes. Rich in minerals, it also has extensive forests of cinchona, the bark of which is largely exported. Area, est. 3,705 sq. m. Population est. 198,100.

Loja, the capital, situated at an alt. of 6,850 ft., and served by rly., has a pleasant climate. Founded in 1546, it possesses a cathedral and a law school. Woollens are made, cereals, sugar, cotton, and tobacco are produced, and cattle are raised. In the neighbourhood are gold, silver, and copper mines. Pop. est. 19,000.

**Loja.** Town of Spain, in the prov. of Granada. It stands on the river Genil, 32 m. by rly. W. of Granada. Picturesquely placed at the foot of hills overlooking the

Genil, it has a ruined Moorish citadel, two 16th century churches, and a palace of the dukes of Valencia. It manufactures coarse woollens, leather, paper, and silk, and carries on a thriving trade in cattle and cereals. With Alhama, it formed one of the "two Keys of Granada." It was wrested from the Moors by Ferdinand III, in 1226, but was soon abandoned, to be recaptured by Ferdinand and Isabella, May 28, 1486, through the help of English bowmen under Lord Rivers. Pop. 20,493.

**Lokeren.** Town of Belgium, in E. Flanders. It is a manufacturing town in the densely peopled and highly productive district of Waesland, and is a rly. junction between Ghent and Antwerp, about 12 m. E.N.E. of the former. The church of S. Lawrence has a famous pulpit by Verhaeghen. Pop. 25,602.

**Loki.** A giant in Scandinavian mythology, of a race that reigned before the gods, the personification of fire as a destructive agent. He is beautiful, but cunning and malignant, and swears friendship with the gods in order to ruin them and the world. Through his guile Balder (*q.v.*) was slain. In some myths Loki is chained to a rock, while a serpent drops poison on him. His children are the wolf Fenrir, the earth-serpent, and Hel (*q.v.*).

**Lokman** (Arab., devourer). The traditional author of certain Arabic fables, which are of Greek origin. He is called the son of Baura, a relative of Job, and is said to have lived for several centuries, and to have known David. Described as a deformed Ethiop slave, Lokman has been identified with the Greek Aesop. One of the chapters of the Koran, in which reference is made to the wisdom of the fable-teller, is entitled Lokman.

**Lolland.** Alternative spelling of the Danish island more commonly spelt Laaland (*q.v.*).

**Lollards.** Name given in England in the 14th and 15th centuries to the followers of John Wycliffe (*q.v.*). It is derived from the Middle Dutch *lollen*, to sing in an undertone, the name *Lollard* having been applied to the members of an association for burying the dead, founded at Antwerp c. 1300, which, like a similar body, the Beghards, came to be persecuted for suspected heresy. Hence the term was extended in England to those who, under a religious guise, concealed turbulent motives. Some well-known Lollards were more or less independent of Wycliffe's influence; others were simply men who

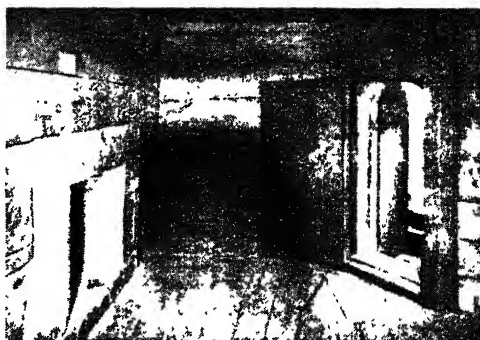
sought their own salvation in an individualistic way, regardless of the Church, and were sometimes communistic in their ideas. They attacked ecclesiastical endowments, the hierarchy, clerical celibacy, the Mass, and prayers for the dead; charged the clergy with immorality; and denounced capital punishment.

The first English statute against heresy, in the reign of Richard II, was passed by the lords and directed against the Lollards. In 1388 both lords and commons petitioned the king against them, and royal letters urging repression were sent to the archbishops and their suffragans. In 1395 the Lollards themselves presented their case to parliament. In 1401 the statute *De haeretico comburendo* was passed, and whereas excommunication and imprisonment had been the worst forms of punishment for heresy, the civil authorities were now empowered to inflict death by burning upon all offenders handed over to them by the ecclesiastical courts. A prominent victim was Sir John Oldcastle (*q.v.*) in 1417.

Between 1401 and 1532 forty-seven Lollards suffered the extreme penalty. As it developed, Lollardy assumed a social and political character, and was used by courtiers opposed to the political power of the prelates. Generally the Lollards were a poor and unlettered people. Though repressed in both England (especially in London) and Scotland (Ayrshire) by Church and state, they prepared the way to some extent for the Reformation (*q.v.*).

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**Lollards' Tower.** Place of imprisonment attached to episcopal palaces for those accused of heresy. The tower at Lambeth Palace (*q.v.*), popularly known since the 18th century as the Lollards'



Lollards' Tower. Interior of the prison room in Lollards' Tower, Lambeth Palace, London

Tower, owes this name to a confusion between the archbishop's prison and that of the bishop of London at Old S. Paul's, which is definitely called the Lollards' Tower by Stow. Consult Chapters in the History of Old S. Paul's, W. S. Simpson, 1881.

**Löllingite.** In mineralogy, essentially iron diarsenide ( $\text{FeAs}_2$ ), occurring as steel-white metallic grains in mineral veins formed at moderate temperatures. It resembles arsenopyrite, but contains a much higher proportion of arsenic and is a richer ore-mineral of that element.

**Lolo.** Chinese collective name for aboriginal peoples, mostly in Szechwan, Kweichow, and Yunnan. Calling themselves Nosu, they include the Man and Hsifan tribes. Tall, fair, level-eyed, straight-nosed, wavy-haired, hardy hill-men, they comprise the noble Hai (black-bones) and the plebeian Pai (white-bones). Their Tibeto-Burman speech is shared by Lisu, Lahu, and other tribes. They may number 60,000 in Burma and several thousands in Tongking.

**Lomami.** River of the Belgian Congo, a southern tributary of the Congo. It runs nearly parallel with the Lualaba-Congo, and enters the main stream at Isangi, about 65 m. below Stanleyville. It has not received the attention of explorers and traders, and flows through an unknown section of the country. Lomami is the name of a dist. containing the upper courses of the Lomami and Sankuru.

**Lombard, CAROLE** (1909-42). American film actress. Jane Peters was born at Fort Wayne, Ind., Oct. 6, 1909, and appeared on the screen from 1926, at first in Mack Sennett comedies. Then she played the blonde adventuress type of part, but in 1936 made a success in "crazy" comedy with *My Man Godfrey*. Later films



included *Nothing Sacred*, 1938; *They Knew What They Wanted*, 1941. She was killed, during a war bond selling tour, in an air crash near Las Vegas, Nevada, Jan. 16, 1942. She married (1) William Powell; (2) Clark Gable.

**Lombard, PETER** (c. 1100-60). Italian schoolman. Born at Novara, then in Lombardy, he was educated at Bologna and Reims, where he was befriended by Bernard of Clairvaux, and at Paris, where he was a pupil of Abelard. He became a teacher of



Peter Lombard,  
Italian schoolman

theology, canon of the convent of S. Victor, and, in 1159, bishop of Paris. He is said to have been the first to obtain the title of doctor of theology in the university of Paris. He is called *Magister Sententiarum* (master of sentences) from his theological manual, *Libri quatuor sententiarum*, *Four Books of Sentences*, collated from the Scriptures and the works of the early Fathers, and designed to explain the whole system of Catholic theology and ethics. Upon this work, which served for a long time as the basis of all theological literature in Europe, more than 4,000 theologians are said to have written commentaries.

The first book treats of God, and brought the author before the Lateran council in 1139 on a charge of heresy, of which he was acquitted; the second, created things; the third, the incarnation, redemption, and human virtues; the fourth, eschatology and the sacraments. He maintained that, until the day of judgement, the inhabitants of heaven and hell will continually see one another, but that in the succeeding eternity the inhabitants of heaven alone will see those of the opposite world. Two other works, a *Commentary on the Psalms and Commentaries upon all the Pauline epistles*, are attributed to Lombard, who died in Paris, July 20, 1160. *Consult Life* (in French), F. Protois, 1881.

**Lombards.** Ancient people of Europe. The Lombards or Langobardi, whose name perhaps means the men of the long axes, were among the last of the Teutonic tribes who forced their way into that part of Europe which had been Latinised by the Roman empire. They lived on the lower Elbe in the 1st century of the Christian

era, but are found four centuries later in Moravia, where they became Arians. They revolted from the Heruli, and subsequently overthrew them in 493.

In the middle of the 6th century, aided by the Tartar Avars (*q.v.*), they extirpated the kindred German race of the Gepidae on the middle and upper Danube, and then, under their king Alboin, burst into N. Italy, 568, and made themselves masters of the whole plain of the Po, making Pavia their capital. Hence the region which they acquired received its permanent name of Lombardy. After Alboin (d. 572) the Lombards were ruled according to ancient tribal customs by many captains or chiefs, who extended their conquests over half Italy as far as the southern duchy of Benevento; a merely nominal sovereignty was enjoyed by an elected king. Catholicism replaced Arianism about 600 through the influence of Queen Theodolinda. There were periods of comparative progress in the time of Agilulf (591-615) and Rothari (636-652), who issued the code of Lombard laws.

From the middle of the 7th cent. till the middle of the 8th cent. Lombard dukes and kings were a perpetual menace to the papacy. The establishment of a real Lombard kingdom of Italy seemed close at hand in the reign of Liutprand (712-43). He established a real authority over the Lombard dukes. A quarrel between Liutprand and Pope Gregory III, and an attack upon Rome, caused the pope to appeal to the Frank Charles Martel against the Lombards, but it was not till after Liutprand's death that Pepin, the son of Charles, answered the papal appeal and set about the subjugation of the Lombards, which was actually completed in 774 by his son, Charlemagne.

The crown of Lombardy became the symbol of the imperial supremacy in Italy, and the Lombard kingdom itself soon disappeared. In the later Middle Ages the name of the Lombards, still preserved in Lombard Street, was given to the Italians who took the place of the expelled Jews in providing the crown with financial support. *Consult Italy and her Invaders*, T. Hodgkin, 2nd ed. 1892-96.

**Lombard Street.** A London thoroughfare, running from the Bank of England to Gracechurch Street, across which it is continued by Fenchurch Street. It contains the Wren church of S. Edmund—another of his. All Hallows, has

been removed under a replanning scheme—and S. Mary Woolnoth, built by Hawksmoor. Off Lombard Street are George Yard and Plough Court, where a tablet records that Pope was born. The street obtains its name from the Lombards who settled here as early perhaps as the 12th century. They were money-lenders, and this association has been kept up, many of the great British and foreign banks having their offices here. Lombard Street is often used as a synonym for the London money market. It is also the title of a classic work by Bagehot, 1873.

**Lombardy.** Territorial division, called a region, of N. Italy. It borders the Swiss cantons Grisons and Ticino, and contains the valley of the Po from the Rhaetian Alps in the N., between Piedmont and Venetia, to Emilia in the S. It embraces the provs. of Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia, Sondrio, and Varese. Except in the N., where it is mountainous, the surface is virtually a fertile and well-cultivated plain. The division is well watered by the rivers Po, Adda, Oglio, Ticino, etc., and is well canalised and irrigated. Lake Maggiore is on the W. boundary and Lake Garda lies on the E. frontier. The beautiful lakes of Como and Iseo are wholly within Lombardy. The climate is very hot in summer and cold in winter. The chief productions are iron, copper, zinc, marble, granite, and alabaster.

Silk is largely manufactured, and the mulberry tree cultivated, while rice, maize, flax, hemp, wine, fruit, and nuts are grown. The chief town is Milan.

Lombardy was named after the Lombards (*q.v.*), who wrested it 568, from the E. Roman empire. Conquered by the Romans 222 B.C., it had been part of Gallia Cisalpina or Transpadana. The Lombard cities, which grew rich by industry and trade, formed small republics and joined the Lombard league, which successfully stood out against the emperors. By the close of the Middle Ages Lombardy came under the rule of the dukes of Milan. It later fell under the sway of Spain, and then of Austria. It was taken from the latter in 1859 and made part of the kingdom of Sardinia, and two years later was incorporated in the new kingdom of Italy. Area, 9,183 sq. m. Pop. 6,190,361. *See Italy*; *History*.

**Lombardy Poplar** (*Populus italica*). Tall-growing tree much used for ornamental purposes. It is of hybrid origin, one of the parents



Lombardy Poplar in winter, showing vertical direction of branch growth

being the black poplar (*P. nigra*). Rapidly growing in the form of a spire, it attains a height of from 100 to 150 ft. Male and female flowers are borne on different trees, and it is the male which is commonly grown, propagation being made by suckers and cuttings. See Branching illus.; Poplar.

**Lombok.** Island of the United States of Indonesia. A mountainous volcanic island of the Sunda group, it is separated from Sumbawa on the E. by the strait of Alas and on the W. from Bali by the strait of Lombok. Two mountain chains extend along the S. and N. coasts, in the latter of which is a volcanic peak, Mt. Lombok, 12,379 ft. high. Between the mountains is a fertile valley in which rice, maize, and coffee are grown, and cattle and horses raised. The capital is Mataram and the principal port Ampanam, on the W. coast. The island exports cattle, horses, tobacco, and indigo. Lombok came under Dutch control in 1894, and was governed by a rajah through the Dutch resident of Bali and Lombok. The native ruling class are Brahmins, but the mass of the people are Malays and Mahomedans. Occupied by the Japanese in the Second Great War, the island was liberated by British troops in Sept., 1945. It is now part of East Indonesia. Area 2,000 sq. m. See Bali; Wallace, A. R.

**Lombroso, CESARE** (1836-1909). Italian criminologist. Born Nov. 18, 1836, he became an army surgeon, 1859; professor of mental diseases at Pavia university, 1862; later professor of forensic medicine and psychiatry at Turin. In 1875



Cesare Lombroso, Italian criminologist

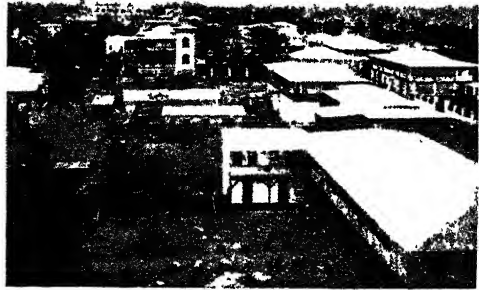
he published his monumental work *L'Uomo Delinquente* (The Criminal), in which he promulgated the theory that there was a definite criminal type which could be distinguished from the

normal type both anatomically and psychologically. Other books include *The Man of Genius* (Eng. trans. 1891); *Crime, its Causes and Remedies* (Eng. trans. 1911). He died Oct. 19, 1909. See Criminology; consult Life, H. Kurella, Eng. trans. 1911.

**Lome.** Seaport of French Togoland. Under the German administration before the First Great War, it was the capital of the country. Situated in the extreme W. of the colony, on the right of Benue, it is connected with Atakpame by rly., and also by rly. along the coast with Aného. The port has a wharf which can take a daily traffic of 600 tons. Lome was captured from the Germans by a British force on Aug. 7, 1914. Pop. 27,908.

**Lomond.** Scottish loch or lake. It covers 27 sq. m., but has a length of 23 m., the breadth being mostly one mile and only at one point 5 m. The largest inland loch in Scotland, it is often called the most beautiful. Its extreme length is between Ardlui and Balloch. It lies between Stirlingshire and Dumbartonshire, amid

Lomond. At Inversnaid coaches from the Trossachs connect with the steamers on the lake. The romantic associations of the district inspired a celebrated song. Around Balloch its shore has been industrialised; at Inveruglas, on the western shore of the lake, a power station of the N. of Scotland hydro-electric board's Loch Sloy scheme came into operation in March, 1950. See Ben Lomond.



Lome, West Africa. European quarter of this seaport town of French Togoland

**Lomza.** Town of Bialystok, Poland. In the 16th cent. it had a trade with Prussia and Lithuania. In 1795 it came under the dominion of Prussia, and after the peace of Tilsit (1807) it was under Russian rule until 1918. It lay in Russian-occupied Poland after the partition of 1939, was overrun by the Germans in 1941,



Loch Lomond, Scotland. View of the loch looking eastward from Luss

mountain and other scenery of great beauty. In the lake are a number of wooded islands. It receives the Endrick, Luss, Arklet, and other streams, and its waters pass by the Leven and the Clyde to the sea. On the E. side is Ben

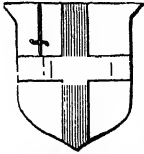
and recaptured by the Russians after bitter fighting, Sept. 13, 1944. It stands on the Narew, a tributary of the Bug, 80 m. N.E. of Warsaw, on a branch of the Leningrad-Warsaw rly. Trade is carried on in corn, timber, and tar.

# LONDON: THE WORLD'S LARGEST CAPITAL

W. ERIC JACKSON, Assistant Clerk to the London County Council

*Here is an account of the history and activities of the capital of Great Britain, including particulars of the effect on that city of the air: aids it suffered during the Second Great War. Elsewhere in this work are hundreds of articles concerned with the boroughs, districts, parks, squares, buildings, monuments, etc., of the metropolis, e.g. Bankside; Lambeth; Kensington; Westminster; Hyde Park; Trafalgar Square; Guildhall; Law Courts; Tower, The, etc. See also Great Fire and biographies of eminent Londoners: Defoe; Dickens; Hogarth; Milton; Pepys, etc.*

The name London has many meanings. In the popular sense it includes the vast inhabited area



City of London  
arms

which stretches from Kew to Barking, from Surbiton to Enfield, and even beyond. When the registrar-general, for statistical purposes, first devised the term "Greater London" he took the metropolitan police and city police districts which together form an area more or less within a radius of 15 m. from Charing Cross. That term has since become popular and expresses a recognition that this great area is, in many senses, one unit. Greater London, in fact, comprises the whole of Middlesex and parts of the cos. of Essex, Kent, Surrey, and Hertford, has an area of 693 sq. m., and a pop. (1946) of 8,033,640. The built-up sprawl into which the original London has expanded has not ceased at the boundary of "Greater London" so defined. The Greater London Plan issued by the govt. in 1944 includes an even wider area.

The present City is the original London dating from Roman times. A square mile in area, it lay within the city wall, with the Ludgate



County of London  
arms

in the W., Aldgate in the E., Aldersgate in the N., and the Thames as its S. boundary. In contemporary speech the name London is more appropriately applied to the administrative co. of London, formed in 1889. This contains about 118 sq. m., with a pop. (1946), of 3,207,270, and includes the city. Outside the city, the co. is divided into 28 met. bors.

The London postal area is larger than the co., although it does not contain some small parts of Woolwich and Lewisham. It is divided into eight districts, which in turn are divided into a total of 118 separate delivery areas. For the purpose of main drainage, electricity supply, and water supply other special areas have been defined, each differing from the others and each larger than the co.

**GEOLOGY AND GEOGRAPHY.** The primary factor which has determined the importance of London is its position at the head of the Thames estuary, the main gateway into Britain from the Continent. Medieval chroniclers attribute the foundation of London to legendary heroes of prehistoric ages, but from archaeological and historical evidence there is little doubt that before the first cent. A.D. the site of London was a marshy tract merging on the higher ground into primeval forest, and that the main crossing of the Thames used by the Romans was at or near the site of London bridge.

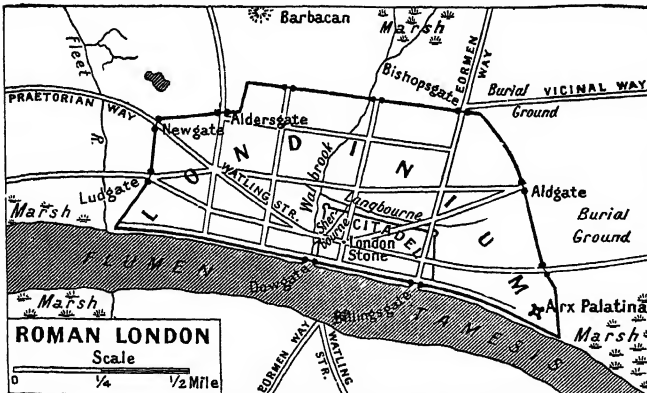
S. of the river most of the land

in the London area is low-lying. Because of its marshiness it was little built on until the 19th cent. N. of the river the ground rises fairly sharply, excepting where streams ran down from the Hampstead heights. The Westbourne flowed through what is now Hyde park to its outlet at Chelsea; the Tyburn ran a little to the west of Bond St., across Green Park, and into the Thames by two branches at Westminster; the course of the Holbourne was by King's Cross, along the line of Farringdon St. under what is now Holborn viaduct, the lower reaches being called the Fleet. To the E. the river Lea still empties itself by many mouths into the Thames.

London lies within the chalk basin which extends from S. Herts. to the North Downs of Surrey and Kent. The basin is overlaid by a deposit of London clay which, in its turn, has been covered in part by local deposits of river gravels. These gravels form a clean, dry metalling eminently suitable for habitation.

**EARLY HISTORY** London is in origin two cities, the City of London, from its foundation in Roman times a trading centre, and the city of Westminster, which grew up slowly round the royal palace of Westminster. Both "cities" grew until their buildings joined, but throughout the cents. their main characteristics have been retained. The City of London is the centre of commerce, Westminster, "the west end," is the main shopping and entertainments quarter and the seat of govt.

Tacitus tells us that Londinium was already a flourishing community when in A.D. 60 it was destroyed by Boadicea and her tribesmen. It was soon rebuilt by the Romans and was defended against further attack by a wall, portions of which still remain to mark the bounds of the Roman city, e.g. in the Tower, in the churchyard of S. Giles, Cripplegate, and in the street now called London Wall. After the withdrawal of the Romans in A.D. 410, Britain was subjected to waves of invasion by Germanic tribes who knew nothing of urban civilization. Life ebbed from London



London. Plan of the Roman walled city, showing gates (some with their present names), and the roads or ways which radiated to all parts of Britain



and its buildings fell into decay. For over a century it was deserted, but some kind of occupation must have been resumed by the beginning of the 7th cent., for in 604 Mellitus was consecrated bishop of London.

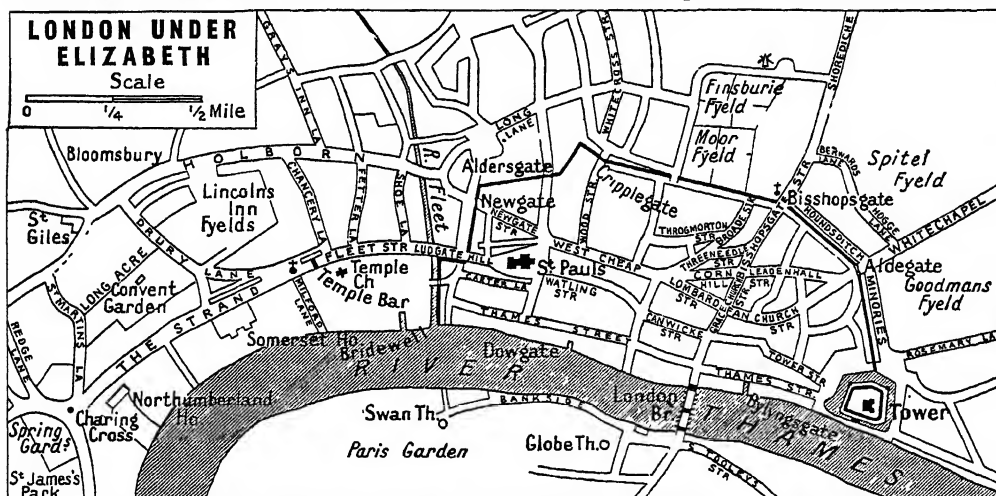
During the wars against the Danes, London, once more a trading centre, was a bone of contention. It seems to have been the centre of govt. when Canute became king of England. The abbey of Westminster, founded probably in the 8th cent. on the Isle of Thorney well outside London, was rebuilt by King Edward the Confessor, who also built a palace for himself close by. His successor, William the Conqueror, realizing the strategic importance of the

had secured a firm hold over commercial matters and over the administration of City govt. They developed into the livery companies, many of which survive. Sir Richard Whittington typifies the wealthy City merchant of the 14th-15th cent.

Westminster increased in importance after the establishment of the law courts there under Henry II. Gradually the great offices of state, the Exchequer, and the Chancery, and their offshoots, became centred there, and in the later Middle Ages when parliament was increasing in importance it too made Westminster its normal meeting place. By the end of the 15th cent. a collection of buildings had sprung up round Westminster

dome by S. Bartholomew priory and Bermondsey abbey.

ELIZABETHAN AND STUART LONDON. The outburst of energy which followed the Renaissance, the popularity of Elizabeth, and the brilliance of her court brought renewed vigour to England's capital. Noblemen, who previously held their town residences in the City, built houses at Westminster where they were nearer the royal court and had more room than in the crowded City streets. The wealthier merchants began to follow their example, and the sovereign became alarmed at the spread of buildings. The growth of a large town was a new phenomenon which might have serious political consequences, and it pro-



London. Plan showing main thoroughfares in the late 16th century, based on maps by Stow and Aggas

conjunction of Westminster and London, had himself crowned in the abbey, and made Westminster palace his chief residence. William built the White tower, the core of the present tower of London, to overawe the citizens, but in some degree reconciled them to his mastery by granting them a charter of liberties.

MEDIEVAL TIMES. During the Middle Ages London grew in wealth and importance and overflowed beyond the ancient walls so that some of its wards lay without the City gates, and new bars or gates were built to mark their limits. Temple Bar and Holborn Bar marked the W. boundary and the citizens tried to assert their rights over the growing community at the S. end of London bridge in Southwark. As in other towns, merchant and trade guilds were formed. By the 14th cent. they

palace. These housed govt. officials and clerks and provided lodgings for courtiers and M.P.s.

Henry VIII and Cardinal Wolsey did much to change the face of London. They built Whitehall, St. James's, and Greenwich palaces, and to them Hyde park and St. James's park owe their origin. They dissolved the numerous religious houses existing in London. Some of the buildings were destroyed, but some were adapted for secular, parochial, or charitable uses. The priory church of S. Mary Overy became the parish church of S. Saviour's, Southwark (now Southwark cathedral). Schools were founded at Westminster, S. Paul's Greyfriars (Christ's Hospital), and elsewhere; while the hospitals of S. Bartholomew and S. Thomas were founded in the reign of Edward VI as a part replacement of the charitable work

duced many difficulties in the provision of sufficient food and water and sanitation. Elizabeth and James I issued edicts against further building, but they were powerless to stem the tide. London's pop. was growing, and it had to be housed. Nevertheless, the first authentic map of London made about 1570 shows the churches of S. Martin and S. Giles still "in the fields." It was not until the middle of the 17th cent. that Leicester Sq. and the neighbouring streets were laid out by the earl of Leicester on the site of Leicester house, and that the piazza was built in Covent (or Convent) Garden by the earl of Bedford. John Stow in his Survey of London, first ed. 1598, gives a detailed and vivid description of London in a period of rapid change and development. The citizens of London opposed the demands of Charles I for loans

and taxes and supported parliament against him in the Civil War. Soon after the restoration they suffered two severe calamities—the Great Plague and the Great Fire. The result was an impetus to the spread of London. Many people fled from the tainted air of the City to the surrounding villages in 1665, and, although Sir Christopher Wren's spacious rebuilding scheme for London after the fire was not adopted, many of the congested alleys were cleared, and the new houses were less tightly packed than the old, the displaced population finding accommodation outside the City.

#### A City of Spires

Wren made London a city of spires, many of which have fortunately survived both "improvers" and enemy attacks. His greatest monument is St. Paul's cathedral, which, though damaged by enemy bombs during the Second Great War, still supports the great dome, to many people a symbol of London's greatness.

17TH, 18TH, and 19TH CENTURIES. The discovery of the new world and the opening of routes to the East meant a great increase of trade in London. The new trading companies—the merchant adventurers, the Muscovy co., the E. India co., the Hudson's Bay co., etc.—had their h.q. there. The river quays grew busier, but it was not until 1800 that the first dock, the W. India dock in the Isle of Dogs, was built.

The guilds and livery companies, originally democratic in character, tended to become more exclusive and oligarchical as they grew richer. Poor craftsmen were often forced to leave the City, either because of the high cost of living or because of the restrictions imposed by the guilds. They plied their trades in the suburbs and sold their wares to the City shopkeepers. They were joined by craftsmen from other parts of England and, particularly in the 16th and 17th cents., by refugees from persecution on the Continent. French silk-weavers settled in Spitalfields and Shoreditch, feltmakers from Rouen and hop-dealers from Flanders settled in Southwark, tanners in Bermondsey.

The poorer workers who made their abode outside the City either crowded into existing houses or put up makeshift sheds and hovels. Simultaneously a more orderly growth of London was taking place. Landowners were "developing" their estates W. of the City with the aid of the speculative

builder, and streets and squares of houses were being built to accommodate the nobility, the City merchants, and the new professional classes. Many of these flat-fronted brick Georgian terrace houses still survive, particularly in Westminster and Bloomsbury.

The London bridge, built at the beginning of the 13th cent. by Peter de Colechurch, survived, though with many repairs and alterations, until 1831 when the present bridge was opened. No other bridge was built over the Thames in the London area until the first Westminster bridge of 1750. The first Blackfriars bridge was completed in 1769. Approach roads to these two bridges were formed on the S. side of the river, converging at St. George's Circus, but little building took place between them except along their immediate frontages. The area between Blackfriars Rd. (formerly Great Surrey St.) and the Borough was, however, almost all built over by the end of the century.

In the years following the industrial revolution London, like the rest of the country, had a rapidly increasing pop., though from 1785 onwards hundreds of London pauper children were sent N. to work in the factories. The speculative builder was busy both building round the central area and developing the villages surrounding London—Islington, Hackney, Poplar, Greenwich, Camberwell, etc.—until they converged into the urban agglomeration now called London. Even marshy land like that in Pimlico and Lambeth, previously considered unfit for building, was drained and built on. Street upon street of uniform semi-basement houses was built to accommodate the large families and plentiful domestic servants of Victorian London, the London of extremes of wealth and poverty, of bustle and confusion, ill-drained, and often fog-bound, but full of vitality, admirably portrayed in the novels of Charles Dickens.

#### Outbreaks of Cholera

The public health conditions in London were, as were those of other great cities at this time, deplorable. The tainted and inadequate water supply, the slums and cesspools, and the festering graveyards resulted in outbreaks of cholera in 1832-33, 1848-49, and 1853-54, which spread from the poorer to the richer quarters of the town.

The social conscience was awakened. The reforming zeal

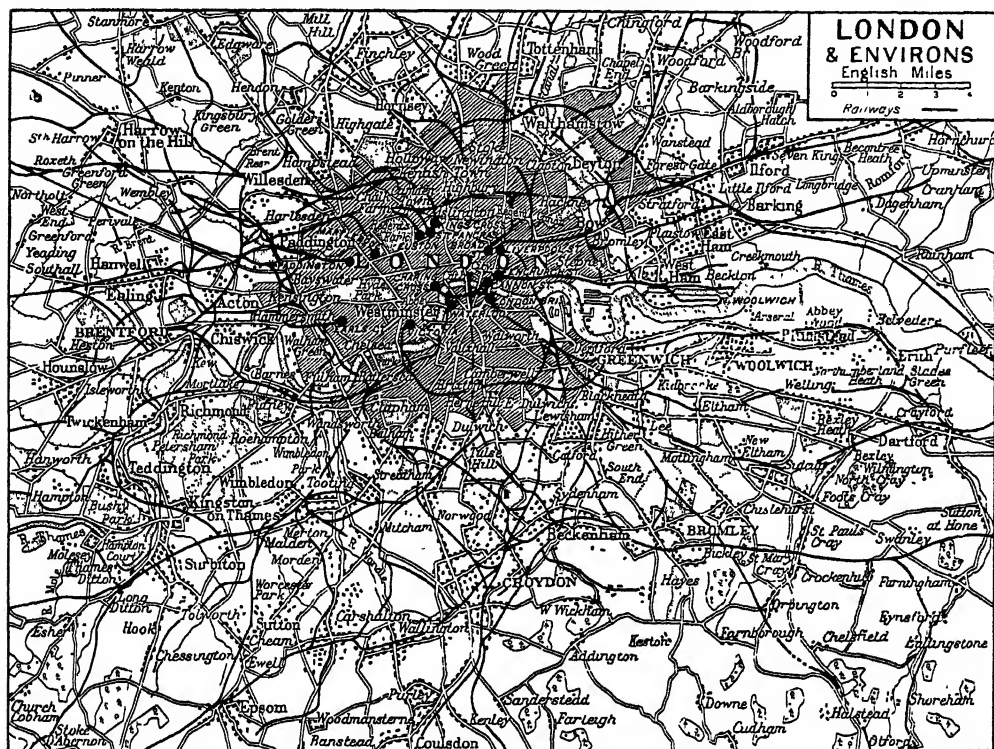
engendered throughout the country in the latter part of the 19th cent. had an impressive impact upon London's local govt. Twice at least in that half-cent. the organization of local administration in London was drastically overhauled.

THE CITY CORPORATION. Of the authorities sharing the local govt. of London, the City of London corporation is the most ancient. The earliest London officials recorded are the bishop and the portreeve, mentioned in the charter given to the City by William the Conqueror. The portreeve was apparently the representative of the civil authorities. His office appears to have been abolished and his place taken by the sheriff or shire-reeve, appointed by the king. Londoners were, however, granted by Henry I the unusual privilege of appointing the sheriffs of London and Middlesex (in which co. London then was). This privilege was forfeited in the reigns of Henry II and Richard I, but restored by John in 1199.

#### History of the Mayoralty

At a somewhat earlier date a new official appears to have been created—the mayor. His office dates certainly from 1191 and probably from some years earlier. John, during the absence of his brother Richard I, granted to the citizens of London the right to elect their own mayor. The conferment of this right was the price of the citizens' support of John against the justiciar Longchamp. John swore to recognize the London commune, a form of town govt. borrowed from Rouen. Under this system the local governing body was the mayor and 12 *échevins* (aldermen) with whom were associated *alii probi homines* (other worthy men), also to the number of twelve. Thenceforward the mayor was the head of London's local govt.

Somewhere about 1540, without any official grant of the title, the mayor became the lord mayor. The *échevins* and the "other worthy men" were forerunners of the present common council. Aldermen had already, from an early date, presided over the 25 wards into which the City was divided. Their earliest appearance as a court of aldermen was in the 13th cent. From the 14th cent. onwards the City corporation thus included the chief magistrate (mayor), a court of aldermen, and a court of common council. The annual election of aldermen was formally ordered in 1377. The common



London. Map of Greater London, showing the vast area it had attained by 1943

councilmen were originally elected by the wards, but by the close of the Middle Ages their election was made by the livery companies. Both aldermen and common councilmen are now popularly elected on a franchise similar to that for other local govt. elections. In 1683 Charles II in his attempt to obtain autocratic power deprived the City of its civic liberties, but they were restored in 1698.

The court of common hall consisted originally of all freemen of the City. Later it became representative of the wards. It consists today of those freemen of the livery companies who are entitled to the "livery" of their companies; it elects the two City sheriffs and certain other officers, and nominates two aldermen for the office of lord mayor from among those who have been sheriffs. The court of the 25 aldermen now elected for life, one for each ward, acts as a court of justice for minor offences (each alderman being a J.P.) and has the control of the City of London police force. The court of common council is composed of the aldermen and 206 common councilmen elected annually. This court is virtually the

local govt. authority for the City and carries out duties relating to public health, housing, open spaces, streets, and bridges.

The lord mayor presides over all three courts of which the corporation is composed. He is the chief magistrate, has the title of admiral of the port of London, has certain duties in connexion with the royal coronation, and has a number of other functions and privileges. After his election he is presented to the sovereign by the lord chancellor for the royal approval, and is then sworn in by the judges of the high court. This is the occasion for one of London's most popular events, the procession to the law courts, known as the lord mayor's show, held on or about Nov. 9 each year, usually in the form of a display of pageantry illustrative of some aspect of London life or some theme of current public interest. The City of London corporation, largely medieval in form, is a unique local governing body.

Apart from income from rates, the corporation has substantial private property, the funds from which are used for charitable and educational purposes, ceremonies and the entertainment of distin-

guished visitors, and the official salary of the lord mayor. The corporation officials, besides including normal local govt. appointments such as M.O., engineer, surveyor, and solicitor, include also the recorder, appointed for life by the lord chancellor on the nomination of the City. The recorder acts as one of the judges of the central criminal court. The common serjeant is a somewhat similar appointment. The town clerk is elected annually. The chamberlain is by ancient custom the treasurer of the City. The remembrancer has duties connected with official hospitality and the maintenance of relations between parliament and the City. The secondary keeps the register of electors.

The sheriffs of the City lost their jurisdiction over the co. of Middlesex when in 1889 the co. of London was created.

**THE COUNTY OF LONDON.** Before the middle of the 19th cent., in the area surrounding the City, local govt. was partly in the hands of the quarter sessions of the various cos. Each parish had either an annual vestry composed of all the local inhabitants, or a select vestry set up, under the Vestries

Act, 1831, as representing the inhabitants. These vestries had very limited powers. Accordingly, in order to deal with such matters as sewerage, street maintenance, and paving, special bodies were set up under acts of parliament to provide these necessary services in defined localities. By 1855 there were some 300 of these small bodies in the met. area. Numbers of them were in no way responsible to the local ratepayers. The Metropolis Management Act, 1855, defined an area to be known as the metropolis, and in that area abolished these small local bodies and set up administrative vestries elected by the local ratepayers. Some of the smaller parishes were grouped together under elected district boards. These vestries and district boards were given the functions of street management, sewerage, drainage, and the like. For the metropolis as a whole, a met. board of works was set up, not directly elected by the people, but appointed by the local vestries and boards. The met. board had certain general functions over the whole area, such as the management of the London fire brigade, main drainage, the Thames embankments, and the administration of the London building laws.

#### London Made a County

The met. board of works proved unpopular, chiefly because of its indirect election. Complaints of maladministration and corruption were made. A royal commission was appointed to make inquiry. By the Local Government Act, 1888, which set up C.C.s throughout England and Wales, the "metropolis" was made a co. by itself, and the London county council was created. The co. has its own sheriff and lord lieutenant. For local govt. purposes the City of London is part of the administrative co. of London. For judicial purposes the City remains a separate co. with its own sheriffs.

By 1899 the vestries and district boards were supplanted by the met. bor. councils, 28 in number, of which one (Westminster) has the title of city council. Each of these has a mayor, aldermen, and councillors. The councillors are publicly elected by the local residents every three years. Aldermen are, in number, one sixth of the councillors, and are elected by the councillors every six years. The total membership of a met. bor. council may not exceed 71.

The L.C.C. consists of 20 co. aldermen and 124 councillors. The latter are elected for three years; aldermen are appointed by the

councillors and sit for six years. There is a chairman, a vice-chairman, and a deputy chairman. The council is responsible for certain main services, such as public education, main drainage, major housing schemes, town-planning, the London fire brigade, and a number of large parks and open spaces. The City corporation and the met. bor. councils administer local services such as public libraries, baths, cemeteries, refuse collection, minor housing schemes, public gardens, food sampling, and street maintenance.

#### Authority Managing the Port

The management of the port is in the hands of the port of London authority, which is partly appointed by the govt. and local authorities, and partly elected by users of the port. Water supply in and around London is managed by a special water authority, and police services outside the City and within an area extending some 15 m. from Charing Cross are under the control of a commissioner of police for the metropolis, who in turn is subject to the supervision of the Home office.

**TRADE AND INDUSTRIES.** Besides being a national and imperial capital and a governmental and administrative centre, London is a hub of commerce and an area of very considerable industry. The greatness of London has, indeed, been founded upon commercial activity. The livery companies developed out of guilds which were chiefly concerned with crafts and local trade, but they soon became divided into those which catered for local demand and those which undertook international trade. Of the latter class the mercers were the most prominent, and from their co. the great merchant adventurers co. evolved, the first of the many important trading companies which assisted in the development of the resources of the new world. The first royal exchange was built in the reign of Elizabeth, and provided a tangible sign of the growing importance of London trade. Until then merchants had been obliged to meet in the streets to transact their business or (at a later stage) to make use of the converted nave of S. Paul's as a sort of general meeting place.

The great increase in the number of banks during the 17th cent. illustrated the growing prosperity and commercial activity of London. These banks were in the hands of the goldsmiths, who, in the 16th cent. had taken the place of the Lombard and other foreign bankers

of the Middle Ages. The great event which marks the beginning of the era of London's modern trade, however, was the foundation of the bank of England in 1694. From this time onward London tended to become a world centre for trade. The 18th cent. saw terrible financial crises, the worst of which was the bursting of the South Sea Bubble in 1720. These were, however, temporary checks in a steady development.

The Crystal Palace exhibition of 1851 marked one of the peak periods of London's prosperity. The exhibition was held in Hyde park, the building being subsequently moved to Sydenham. It survived until 1936 when it was destroyed by fire. None of the subsequent "great exhibitions" at Earl's Court (1894), the White City (1908-10), and Wembley (1924-25) aroused quite the same enthusiasm.

#### Industrial Development

At the beginning of the 20th cent. London had a world-wide importance not only in commerce but also in industry. Within the co. of London in 1938 approx. three-quarters of a million persons were engaged in productive industry. Some 37,000 factories and workshops were in operation. The principal industries were (in order of size) engineering, clothing, food (including tobacco and drink), furniture, printing and paper, and chemicals, besides a large number of miscellaneous trades. Engineering and clothing in 1938 accounted for some 55 p.c. of London's industrial employment, and 60 p.c. of its factories and workshops. The Second Great War (1939-45) with its air-raid damage did not greatly alter this balance. There is a tendency for industry to decentralise from the congested inner areas to the outer belt, a process encouraged by the various town-planning proposals. This, however, may be regarded as a spreading of London rather than as a diminution.

The average number of workers per factory, except for a few relatively large ones, is less than 20. Industry is for the most part small-scale and very scattered, although engineering works of no small importance are to be found on both sides of the river. The royal arsenal at Woolwich is a particular example. In the same bor. and in Greenwich, Deptford, Poplar, and Battersea heavy engineering is organized in large units undertaking the manufacture of cranes, boilers, cables, marine engineering, and ship repairs. There

is a certain amount of shipbuilding of smaller craft. Medium and light engineering, including the production of printing machinery, electrical and household equipment, pressed metal work and scientific instruments, is distributed throughout the co.

#### The Clothing Trade

Clothing manufacture and tailoring is chiefly grouped in two areas, the west end (the centre of fashion) and the east end (the main centre of wholesale, warehouse, and mass-produced trade). Much of the "tailoring-out" work for the high class west end tailors is done in Soho, some of it in the east end. The centre of the west end dress-making trade is Regent St., Bond St., and Brook St., while Oxford St. is the shopping centre for the less expensive retail drapery and women's clothing. In Hanover Square and Soho Square is the wholesale dressmaking business. The east end wholesale trade is linked with the City warehouses, but some high quality specialised work is also carried out. The boot and shoe industry lies chiefly in Hackney. The fur trade is located in Stepney, Bethnal Green, and Hackney in association with the fur warehouses of the City.

Food manufacture and allied processes, such as bacon curing, butter blending, sugar refining, tobacco processing, and brewing, form a very substantial part of London's industry. The furniture making trade is located chiefly in the east end, as an overspill from the City, and is carried on in both small and large workshops. A trade in repair work is developing in the west end mainly in association with the big shopping centres and the antique furniture trade.

The printing industry continually expands. An important section of this trade is the production of daily newspapers and other periodicals and the subsidiary trades, such as process work, ink making, and general stationery.

The heavy chemical industry in and around London is largely outside the boundary of the co., but there are in the co. substantial factories concerned with oil refining, paint, soap, glue, and gas manufacture. A great development has taken place in the light chemical industry concerned with cosmetics, tooth-paste, surgical requisites, and the like.

In the period between the First and Second Great Wars industry, particularly light industries, tended to gravitate towards London. The Town and Country

Planning Act, 1947, and other acts, and town-planning schemes made under them, had as one of their objects the establishment of satellite towns, with an appropriate amount of industry, some 20 to 50 m. out from London, in order to relieve the congestion of London and provide better living conditions there.

The backbone of London's industry is the port of London with the majestic easy-flowing Thames leading right into the heart of the city, and London's long pre-eminence as a port is likely to continue. The port has a tremendous entrepôt trade and is a supply centre for London region.

Of the wholesale markets Covent Garden, where fruit, vegetables, and flowers are sold, is perhaps the most famous. Smithfield is the principal market for meat, Billingsgate for fish.

The London stock exchange is the leading exchange of its kind in the country. Lloyd's is the centre for world marine insurance. The Fleet St. area contains many newspaper and publishing offices.

**AMENITIES AND SOCIAL LIFE.** Since the days of Shakespeare and the theatres on Bankside, London has been the mecca of British actors. Most of the theatres are in the neighbourhood of Charing Cross Rd. and Shaftesbury Ave. Cinemas are numerous and vary in size from the super cinema (some of which were specially built and some converted from former theatres) to the small news theatre of which examples are found at main line rly. termini. Important films are usually shown in central London before being generally released. Queen's Hall, home of the promenade concert, was destroyed, and the Old Vic, resort of lovers of Shakespearian and other classical drama, was damaged by air raids in 1941; the "proms" found a home in the Royal Albert Hall. Schemes for developing the S. bank of the Thames in connexion with the 1951 Festival of Britain included a concert hall and a national theatre.

#### Art Collections and Libraries

The chief picture galleries are the National and the National Portrait galleries in Trafalgar Square, the Tate gallery (mainly 19th and 20th cent. paintings) on Millbank, and the Wallace collection in Manchester Square. The Victoria and Albert and the British museums contain large collections of drawings and etchings. S. Kensington is the museum centre of London. The London

museum (*q.v.*) was housed at Kensington Palace from 1948.

The British museum library, one of the three copyright libraries, contains over 5 million books and a large collection of manuscripts; the newspaper section was moved to Colindale, 1932. It attracts many students, as does the public record office. Other fine libraries are the science library in the Imperial Institute, the law libraries in the Temple, the library of the London school of economics and political science, and the libraries of London university and its colleges. Many learned societies have their h.q. in London.

#### London's Open Spaces

The royal parks, Green park, Hyde park, and Kensington gardens, form a continuous stretch of open space over two m. long. The rose garden, the lake, and the open-air theatre attract many visitors to Regent's park. The parks at Dulwich, Battersea, and Finsbury Park are among the most attractive of those maintained by the L.C.C. Open-air entertainments and bands are provided in the summer months. Epping forest, Hampstead heath, Richmond park, and Wimbledon common are large open spaces where natural conditions have been retained. Transport to the open countryside is available by bus, motor coach, and rly. The local authorities have done much to preserve "London's country" by buying up tracts of land round the built-up area to form a green belt round London.

Thousands of people visit London every year to see cricket at Lord's and the Oval, tennis at Wimbledon, Rugby football at Twickenham, and Association football at Wembley. Other important sporting events take place at Wembley stadium, the White City, and in the Crystal Palace grounds.

The fashionable shopping centre is the neighbourhood of Regent St., Piccadilly, Bond St., and Oxford St., though Knightsbridge and Kensington High St. attract many shoppers, and none of the bors. is without its local shopping centre. Certain trades and types of shop tend to collect in certain streets, *e.g.*, Charing Cross Rd. is noted for its bookshops, Great Portland St. for motor salerooms. Street markets flourish in The Cut in Lambeth, Middlesex St. (formerly Petticoat lane) in Stepney, Berwick market, Soho, and many other parts.

Westminster abbey, S. Paul's cathedral, and Southwark cathe-

dral attract visitors. S. Martin-in-the-Fields is perhaps the best known of London's parish churches. Westminster cathedral, off Victoria St., and Brompton oratory are the centres of Roman Catholicism. Many churches and chapels were destroyed or badly damaged by enemy air attack in 1940-41 and 1944-45, but the Central Hall, opposite Westminster Abbey, the Memorial Hall in Farringdon St., and Friends' House, Euston Rd., remained as the central meeting places of the Methodists, the Congregationalists, and the Society of Friends. The Salvation Army h.q. in Queen Victoria St. was destroyed.

**PHYSICAL DEVELOPMENT.** London has evolved, as have many other large urban centres, out of a series of ancient villages which have grown into one another by common expansion. The community structure of the former villages can still be traced, overlaid by the general development. In e.g., Blackheath, Dulwich, Chelsea, Lee, the old world atmosphere of the former village can still be sensed. Some of the former centres have become focal points and prominent local shopping centres; Brixton, Lewisham, Peckham are examples.

#### Transport Facilities

When rlys. first came to London in the middle of the 19th cent., the termini at Euston, St. Pancras, and Victoria were on the outskirts of the town. London is now covered by a network of rlys., including surface, underground (at basement level), and "tube" lines. Buses or trams cover every district, and numerous taxi-cabs ply for hire. All the great trunk lines terminate in London.

London's transport has developed without co-ordination and, particularly in the matter of roads, has tended to lag behind need. As London has grown, the transport problem has been intensified. Road widening and extension, improvements in underground and surface rlys. have had constantly to be undertaken; circular roads around London to divert traffic that would otherwise pass through the centre are under construction or in project. Cross-river traffic is a perennial problem. The Thames is, within the co. of London, crossed by ten road bridges under the control of the L.C.C., as well as by four bridges controlled by the City corporation. There are six rly. bridges, two pedestrian tunnels (at Greenwich and Woolwich), two vehicular

tunnels (Rotherhithe and Blackwall), and a free ferry for vehicles and pedestrians at Woolwich. Further bridges and tunnels are under construction or planned.

#### Architectural Styles

Its architecture has made London the butt of criticism of town-planners and a source of endearment to those to whom variety appeals. It includes a few medieval buildings, churches and public buildings often of Portland stone, a mixture of flat, brick-built houses of the 18th cent. and semi-base-ment brick and stone residences of the 19th, interspersed with examples of Victorian Gothic, all darkened with the grime of years, and huge dept. stores, super-cinemas, blocks of flats, and offices in reinforced concrete of the latest design. Large areas of 20th cent. red brick housing of terrace and villa types fill the outer suburbs.

The ever-moving tide of social change has had, and will doubtless continue to have, its effects. Neighbourhoods alter with the trends of fashion and habit. Districts that were once, like Belgravia and Mayfair, exclusively residential are invaded by commercial and professional business; districts that once were high-class grow depressed and workaday. The large town house goes out of fashion, and flats become the vogue.

The air-raids of 1940-1945 scarred London badly, making some localities unrecognizable. The broad outlines, however, remain. S. Paul's continues to dominate the City, the west end remains the centre of culture, fashion, and entertainment, the east end the main area of working-class life. The City is the commercial centre of office, bank, and counting house.

London lost some of her architectural glories—notably, many of Wren's churches in the City—but her citizens won the battle honours of patience and steadfastness under trial. The pop. of the co. fell from over 4 millions to just over 2 millions. With the end of hostilities London filled again, the pop. rising to 3½ millions by the end of 1945; there was acute shortage of housing and business accommodation.

#### Plans for Reconstruction

London, however, like her Cockney inhabitants, is irrepressible. Great plans for reconstruction were prepared by the public authorities during the Second Great War. The County of London Plan 1943, issued by the L.C.C.,

the City of London Plan, 1944, prepared by the City, and the Greater London Plan, 1944, issued by the govt., laid down the broad lines of post-war re-development. Projects for ring roads for fast traffic, increased open space and amenity, new schools, and the decongestion of pop. and industry are among schemes to be implemented before the end of the 20th century.

London of the days of Sherlock Holmes and R. L. Stevenson has disappeared. The horse-bus and the hansom cab are seen no more. The old-time "London particular" fog, yellow as pea soup, offspring of coal smoke, survives but, under the beneficent influence of smoke abatement laws and electrification, only as an occasional pale mist.

The movement towards planned reconstruction has brought consciousness of the value of the old. Buildings of architectural and historic merit are not to be ruthlessly swept away; while the opportunity presented by the enemy's clearance of many sites in the city was used to study Roman and other archaeological remains normally buried under bricks and mortar. London will retain continuity with her great past and continue to be an embodiment of the pride, the achievement, and the affection of the whole British people.

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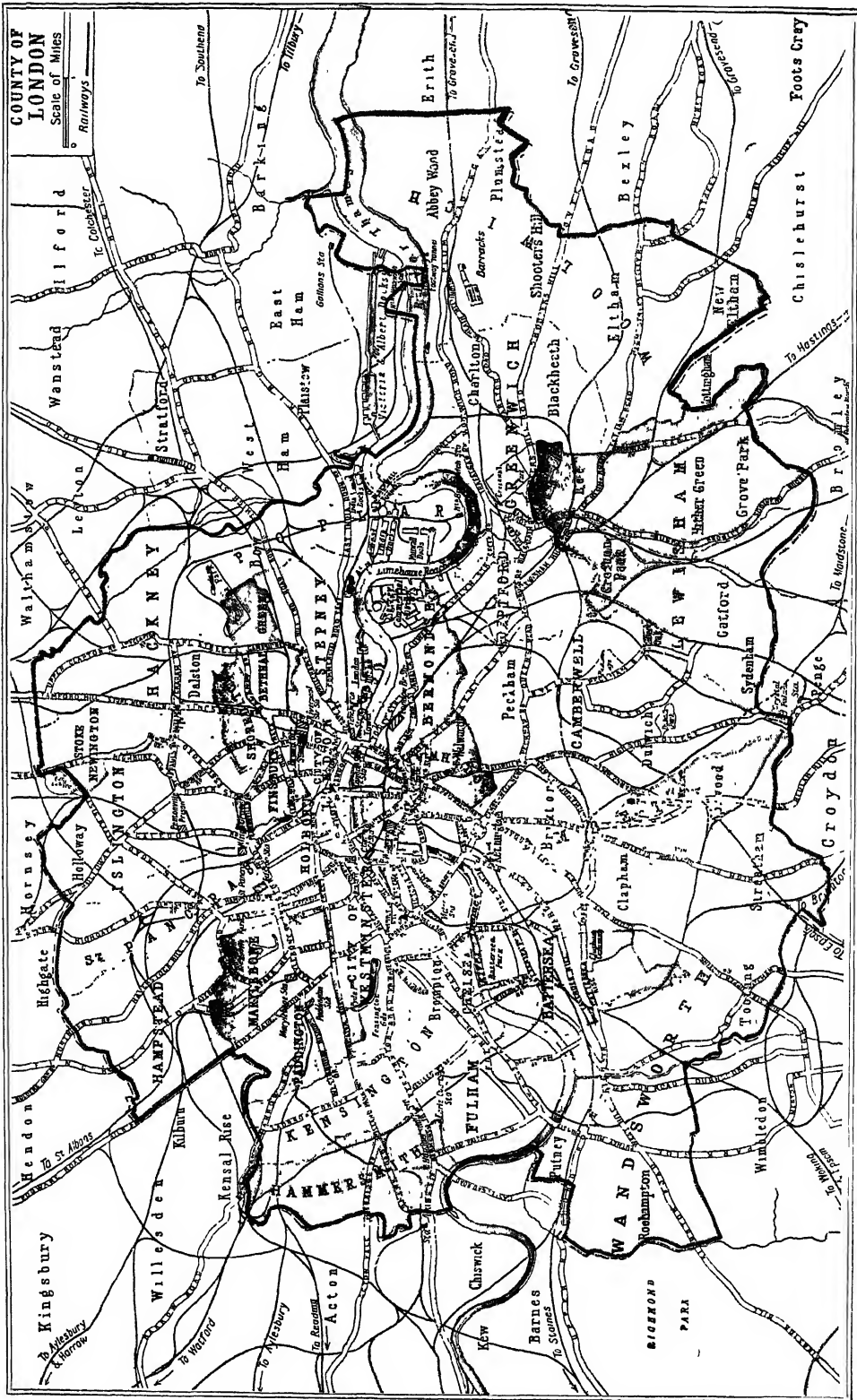




1. Wrecked railway lines, Southwark St. bridge (S R), just S of Blackfriars station 2. A large store in Oxford St., gutted after a severe attack. 3. A.R.P. repair squad in the ruins of a row of small houses 4. Bomb

crater outside the Bank of England (left) and the Royal Exchange 5. High Holborn looking E., after a big all-night raid. 6. N. transept of S. Paul's, damaged in one of the big raids over the City of London

**LONDON SCENES DURING THE HEAVY GERMAN AIR ATTACKS OF 1940-41**



LONDON: BOUNDARIES OF THE 28 BOROUGHES INTO WHICH THE ADMINISTRATIVE COUNTY OF LONDON WAS DIVIDED IN 1899



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W. Eric Jackson

THE SECOND GREAT WAR. Preparations to meet aerial attack on London started at the time of the Munich crisis, Sept., 1938. Distribution of gas masks and the organization of a civil defence force began, and plans (put partially into practice at that time) were drawn up for evacuation of sections of the pop. and of govt. depts. Steel outdoor (Anderson) shelters were distributed free in Feb., 1939, to families who lived in houses and whose income was below £250.

During Sept. 1-3, 1939, 300,000 official "evacuees"—school children, expectant mothers, and aged and blind persons—were sent out of London; and parties continued to leave at intervals until Nov. 10, 1943; official evacuation was reopened July 1-Sept. 7, 1944, to counter the danger from flying bombs.

#### First Air Raid Warnings

The London sirens sounded their first air raid warning—a false alarm—as the prime minister finished broadcasting the announcement on Sunday, Sept. 3, that the country was at war. The blackout of all artificial lighting which was to last until Sept. 17, 1944, had begun on Sept. 1. Notices announcing AIR RAID SHELTERS appeared overnight above basements, some of them reinforced; signs in every street pointed to wardens' and first aid posts, and gas cleansing and fire stations. Zig-zag shelter trenches were dug in many of the parks and squares, to be later roofed in with steel. Statues and monuments in the streets were either removed to a place of safety or bricked up. Barrage balloons went up, and around London A.A. guns were sited, the outermost about 13 m. away.

Sirens sounded again on the night of June 24-25, 1940; and "spotters," whose task after the air raid warning had been sounded was to notify approaching enemy aeroplanes, were thereafter placed on the top of many buildings. The first air attack in the London area came on Aug. 16, when 30-40 bombs were dropped in a S.W. suburb; the first all-night raid on central London was on Aug. 24. The battle of London began on Sat., Sept. 7, with a day and night attack on the docks by more than 600 raiders coming in in waves. Raids continued nightly until Nov. 3, when there was no alert; few nights to the end of Dec passed without an attack. The opening months of 1941 brought

occasional raids, but after May 10-11 there were no further severe attacks until early 1944.

Blast walls of brickwork were put up outside the doorways of office buildings; many ground floor window openings were sand-bagged, many upper windows were bricked up, and when window glass was blown out it was replaced by wood or cardboard. Surface shelters of brick and reinforced concrete were built in every road and open space. It had been intended to keep the tube rly. stations (used as air raid shelters during the First Great War) clear during alerts; but when severe night raids started people carrying blankets and their treasures in suitcases bought 1½d. tickets and took possession, sleeping on platforms and stairways until in Nov. 79 stations were fitted with 7,600 three-tier bunks for which season tickets were issued. When the shelter facilities in these stations were ended May 6, 1945, London Transport added up the nightly numbers of those who had slept in these bunks and made the total forty millions. At the time of the worst raids, however, at least two-thirds of Londoners remained in their homes: the city's sprawl was an aid to safety. The windows of omnibuses, trams, and trains of London Transport, which ran throughout the raids, were covered with protective netting to reduce the danger of their splintering. Indoor steel table (Morrison) shelters were issued in Feb., 1941.

#### Narrow Escape of S. Paul's Cathedral

A one-ton delayed action bomb that penetrated the roadway in front of S. Paul's cathedral on Sept. 11, 1940, was dug out and carted away to be exploded in Hackney marshes, where in the course of time many others joined it, together with hundreds of tons of rubble from shattered buildings. In Oct. a bomb penetrated the roof of S. Paul's, and it was hit again the following April; but though the cathedral was damaged the devotion of the special band of watchers who volunteered to care for it saved it from destruction; its survival was an important contribution to Londoners' morale. Buckingham Palace was hit on Sept. 10, 1940; but the king and queen remained in London throughout the war.

A fire-raising raid on the night of Dec. 29-30 started some 1,500 fires and destroyed acres of buildings in the narrow streets and alleys of the oldest part of the

City; many water mains were damaged, the Thames was at low-tide, and the firefighters could not get water. Only towards the end of 1941 was completed the system of large surface pipes laid along the chief roads and fed by pumps from the river which, with many new water tanks built on cleared sites, would have provided adequate water in the event of another fire attack. Between Sept. 1, 1940, and July 31, 1941, fifty thousand H.E. and countless incendiary bombs fell on London.

#### Effects of Air Raids

Information kiosks set up by London Transport directed people whose normal bus or tram route or rly. station was out of action through the presence of unexploded bombs or road blocks due to bomb cavities or heaps of rubble. Broken gas and water mains, telephone and electric cables were repaired during raids and with remarkable expedition. A temporary bridge was thrown across a crater in Charing Cross road; a crater in Lancaster place caused the closing of (the pre-war temporary) Waterloo bridge, but work continued on the new bridge, which was opened to traffic Aug. 11, 1942. The approaches to a number of Thames road bridges were hit, and there were many near misses close to the innumerable rly. bridges in S. London, but only Hungerford footbridge was cut, by a flying bomb; a wood-and-steel emergency bridge between Westminster and Charing Cross was used by pedestrians until Hungerford bridge was repaired; a second emergency bridge, between Lambeth and Vauxhall, and a third, between Chelsea and Albert bridges, were never used. All the main line rly termini were damaged by blast; Paddington, Liverpool Street, Victoria, and S. Pancras received direct hits. Bombs fell all round Clapham Junction, largest rly. junction in the world, but rarely put it out of action. The enemy's onslaught on the dock area, however, reduced the activity of the port, dockers, barges, and grain elevators from which were transferred to a temporary port at Gareloch in the Clyde.

When in June, 1940, France was defeated and invasion of England seemed imminent, all public buildings were barricaded with barbed wire and with defensive netting. Camouflaged concrete blockhouses were built at strategic points—one of the most conspicuous in Parliament square so well disguised as a

bookstall that hundreds of people passed it every day without realizing that it was a fake. An anti-tank ditch was constructed all round London some 12 m. from the centre.

The removal of iron railings from parks, private gardens, and squares during 1942, which gave public access to squares (e.g. St. James's, Russell, Berkeley) never open before except to occupiers of the surrounding houses, produced about 135,000 tons of scrap iron.

Many business firms, banks, and societies evacuated part or the whole of their organization to the country. Some govt. depts. and parts of others moved out; but the govt. itself and depts. dealing with the conduct of the war remained in the capital. The commons met in their own house until it was destroyed by fire during an air raid on May 10–11, 1941; thereafter they met first at Church House and later in the chamber of the upper house, the lords then meeting in Church House. Seventy feet below Whitehall was the cabinet h.q., construction of which began shortly after Munich; Winston Churchill's wartime broadcasts were made from his private room there. The Admiralty built a bomb-proof citadel behind its pre-war building.

After the German occupation of Europe in 1940, London became throughout the war the seat of the exiled govts. of Poland, Norway, Belgium, the Netherlands, and Czecho-Slovakia, and h.q. of the Free (later Fighting) French until 1943; the exiled govts. of Yugoslavia and Greece were in London, 1941–43. From 1942 the U.S. army and military police uniforms were a familiar sight.

#### Headquarters for European Invasion

In Aug., 1943, preparations for the invasion of Europe began under Lt.-Gen. F. E. Morgan at Norfolk House, St. James's Square, which became Gen. Eisenhower's h.q., Jan.–March, 1944, when he moved to Bushey park, Middlesex, on the outskirts of London.

The "little blitz" on London followed Eisenhower's arrival. Enemy bombers, on most of the 20 attacks during Jan.–March, 1944, about 100 in number, were met by a barrage of intense violence. On the night of Feb. 23–24 they damaged the London library and Chat-ham house in St. James's Square.

Caissons for the Mulberry harbours were made in the Thames estuary, and London was a mounting port for landing craft taking part in the invasion of France on

June 6, for some days before and after which military convoys travelled almost continuously through London on their way to their assembly points. On June 13 the flying-bomb (*g.v.*) attack began; during June 13–Sept. 4 more than 2,300 flying-bombs fell on London; one on June 18 destroyed the Guards chapel at Wellington barracks; another on June 30 fell just outside the Air ministry's office in Aldwych. No London borough escaped damage; Wandsworth was the most severely hit. The bombardment went on through the 24 hours; but Londoners continued by day to go about their life and work, pausing to take shelter only when they heard the sound of an approaching missile. At night, some of them used the eight deep shelters which, started in 1941, were opened during July, 1944. A hundred ft. below ground, these were bomb-proof, gas-proof, and water-proof; each could sleep 8,500, and in emergency shelter 35,000. The first rocket bomb (*see* Rocket) to reach London fell at Chiswick on Sept. 8; more than 500 fell in London. One, on a Sat. morning in Nov., killed 160 in New Cross.

The worst "incident" of the war connected with air attack on the U.K. occurred at Bethnal Green, March 3, 1943, when 173 were killed as crowds entering a shelter lost their self-control through the firing of A.A. rockets.

#### Total War Casualties

A total of 29,890 citizens of London were killed by enemy action, 50,497 injured and detained in hospital; 1,400,245 houses were destroyed or damaged by bombs—many slightly, but enough were uninhabitable to make the housing shortage serious when evacuated Londoners were, on May 2, 1945, officially invited, if their homes were habitable, to return. The first temporary prefabricated houses which helped to remedy this shortage were erected in Poplar, 1943.

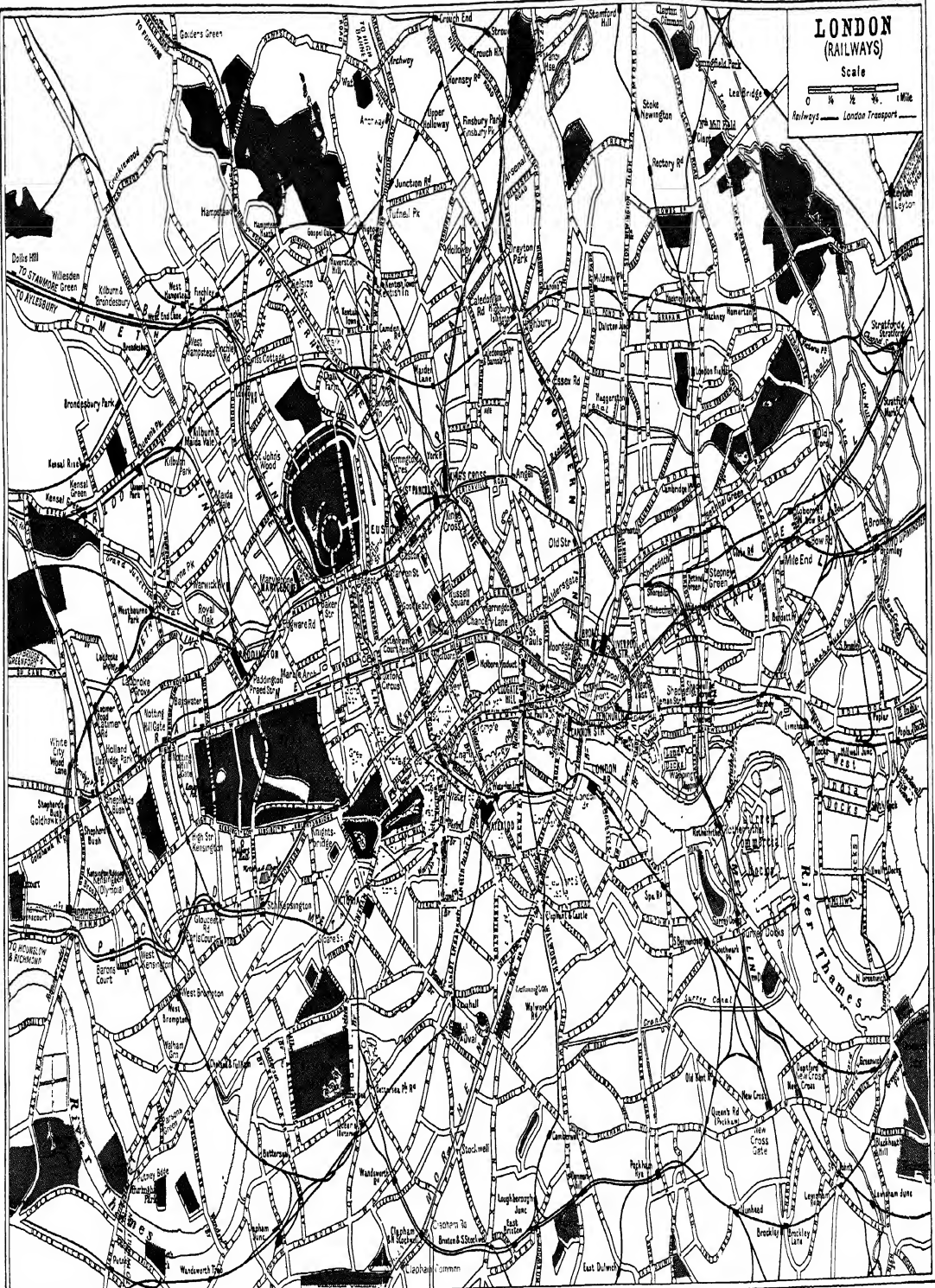
The lantern in the clock tower at Westminster was relit April 24, 1945; and from 10, Downing Street, Churchill broadcast the announcement of the end of the war in Europe on May 8, Clement Attlee that of the war with Japan at midnight, Aug. 14–15.

*Consult* Bombers' Moon, Negley Farson, 1941; Front Line, H.M.S.O., 1942; Cockney Campaign, F. R. Lewey, 1944; The Siege of London, R. Henry, 1946; The Lost Treasures of London, W. Kent, 1947.

Irene Clephane

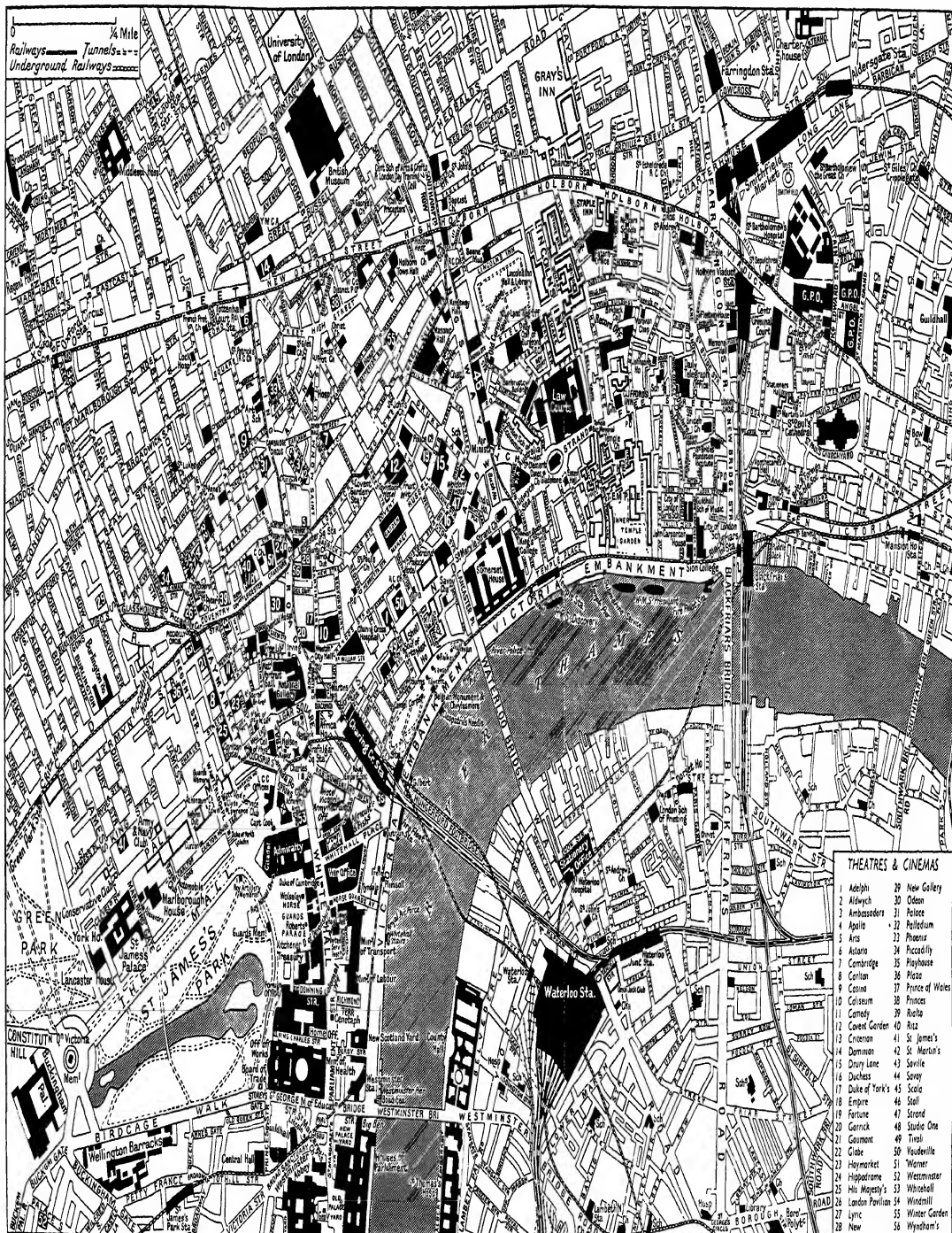






LONDON: MAIN LINE RAILWAYS WITH THEIR TERMINI, AND THE NETWORK OF THE LONDON TRANSPORT SYSTEM OF TUBES AND OTHER ELECTRIC RAILWAYS





LONDON: CENTRAL DISTRICT FROM S. PAUL'S CATHEDRAL (EAST) TO OXFORD CIRCUS (WEST), INDICATING CHURCHES, PUBLIC BUILDINGS, Etc.





**London.** City and port of entry of Ontario, Canada. In Middlesex co., it stands on the Thames, 105 m. S.W. of Toronto. It is served by the C.N.R., C.P.R., also by the Pere Marquette and Michigan Central lines. It has electric tramways which also run to Port Stanley on Lake Erie. The seat of the university of W. Ontario and of R.C. and Anglican bishops, it has for chief buildings the two cathedrals and other churches, hospitals, etc. Industries include the manufacture of agricultural implements and machinery, chemicals, furniture, leather, etc., and here are petroleum refineries and shops of the C.N.R. Electric power is obtained from Niagara falls. London was founded in 1825. Pop. 79,277.

**London, CRIES OF.** Calls of street vendors and others. All but obsolete today, they ranged from the cries of watchmen and watermen, bellmen and boatmen, shopkeepers and apprentices, to those of the hundreds of itinerant traders, balladmongers, etc., who plied their wares or callings in the city streets. Of the trade cries the earliest mention is in Lydgate's 15th century ballad, *London Lyckpenny* (Lackpenny), which throws an interesting light on the life of his time. Many of the cries, like *Sweet Lavender*, were harmonised, and were illustrated by drawings of the criers by T. and J. Bewick, Rowlandson, Cruikshank, Crowhall, and Hogarth (*The Enraged Musician*); they are referred to by the old dramatists (Jonson's *Silent Woman* and *Bartholomew Fair*); by Addison in *The Spectator* (No. 251); and in the *Roxburghe ballads*.

Illustrative drawings by Marcellus Laroon or Lauron (1653-1702) were popularised by the engravings by Pierce Tempest (1653-1717), and, like the series by Francis Wheatley, R.A. (1747-1801), engraved by Schiavonetti (1765-1810) and others, are valued by collectors. The cries of Bologna

have been described by Annibale Caracci (1560-1609), and those of Paris by Victor Fournel in *Les Cries de Paris, Types et Physionomies d'Autrefois*, 1887. Consult *History of the Cries of London, Ancient and Modern*, C. Hindley, 1884; *Old London Street Cries*, A. W. Tuer, 1885.

**London, DECLARATION OF.** International agreement about naval prize law. In 1908-09 an international naval conference was held in London, on the invitation of the British government, to consider and define naval prize law. It did not legislate; it merely codified. Ten great powers, including the U.S.A. and Japan, were represented by 37 jurists, who drew up a code to be observed in every prize court in every country. This code was called the declaration of London, 1909. It consisted of 71

not been ratified by the powers. In Great Britain, the house of lords refused to pass a bill to render it the law of the land. During the war it was found impossible for the Allies to observe the declaration. The provisions relating to blockade were never formally dissented from; but the Allies established a blockade of a new kind, and based their right to do so on the right to exact reprisals for Germany's submarine campaign. The Central Powers paid no attention to international naval law. As a result, on the first test the declaration broke down. See *Blockade*; *International Law*.

**London, PORT OF.** For an account of this body see *Port of London Authority*.

**London, TREATY OF.** Name given to several treaties signed in the English capital, the most important of which are the following: (1) Treaty between England and France made in 1359; its provisions were not kept, and it was replaced by the treaty of Brétigny (q.v.). (2) Treaty signed Jan. 14, 1814, and incorporated in the general settlement made by the congress of Vienna (q.v.). This established the kingdom of the Netherlands, with the prince of Orange as king, but the kingdom was not a success.

(3) In 1831 a treaty was signed in London by Great Britain, Austria, France, Prussia, and Russia. It declared that Belgium, now separated from Holland, should become an independent and neutral state. (4) In 1839, a treaty, also of London, signed by the same powers, confirmed the earlier arrangement, declared Belgium neutral, and forbade that country to make war save in self-defence. This was the agreement violated by Germany in 1914. (See *Belgium*: *History*).

Meanwhile by a treaty signed in London in July, 1827, the European powers decided to intervene in Greece, and drive the Turks, under Ibrahim Pasha, therefrom. This led to the battle of Navarino.

In 1852 a conference of London dealt with the succession to the duchies of Slesvig and Holstein. The protocol signed by the five great powers, also by Norway and Sweden, on May 8, 1852, declared that these duchies must be an integral part of Denmark, and that to them, as to the Dutch crown itself, Christian of Glücksburg, afterwards Christian IX, should succeed on the death of Frederick VII. As it asserted that the German rights in Holstein must



London Cries. "Two bunches a penny, primroses, two bunches a penny." The first of F. Wheatley's series, 1793

articles, in which were embodied international law relating to naval warfare, as then understood in most countries. It dealt with blockade in time of war; contraband of war; the liability of neutrals to capture and condemnation for unneutral service; the destruction of neutral prizes; transfer of an enemy's ship to a neutral flag after a declaration of war; what ships could be termed of enemy character; convoy and resistance to search.

When the First Great War broke out in 1914, the declaration had

remain, it was pleasing to neither party. (See Slesvig-Holstein Question.) Treaties were also signed in London in 1871 and 1883, which dealt with the navigation and control of the Danube and the Black Sea.

On May 30, 1913, a treaty was signed at S. James's Palace to end the war between Turkey on the one side and Bulgaria, Serbia, Greece, and Montenegro on the other. The first meetings, at the end of 1912, had been suspended, and the war renewed. In March, however, Turkey agreed to mediation, as did her foes in April. The representatives met again, and the treaty provided that Turkey should give up Crete to Greece, and should be confined in Europe to a line drawn from Enos to Midia. The Balkan states, however, failed to agree upon a division of this ceded territory, and the second Balkan War began. The treaty was thus never operative. (See Balkan Wars.)

The term treaty of London is given to the secret agreement signed April 28, 1915, between Great Britain, France, and Russia on the one hand, and Italy on the other. Italy agreed to enter the war on the side of the Allies, and the treaty stated the conditions of such assistance. Among these were undertakings that by the treaty of peace she should receive Trentino, part of Tirol, Trieste, and other lands, including some islands belonging to Austria. Other articles dealt with Italy's interests in the Mediterranean, Africa, and elsewhere, and also provided for a loan to her.

The London naval treaty between Great Britain, the U.S.A., and France was signed March 25, 1936. It was divided into five parts, and its outstanding points were definitions of capital ships, aircraft carriers, light surface and auxiliary vessels, and small craft; placing limitations upon the maximum displacement and the size of the heavy armament in battle-ships, aircraft carriers, and submarines; and prohibition of the construction of capital ships or light surface vessels, other than aircraft carriers between 8,000 and 17,500 tons, before Jan. 1, 1943. The treaty also provided for an annual interchange of information about naval construction programmes. In the event of any of the contracting powers becoming engaged in war, liberty was given to suspend the provisions of the treaty, which was to remain in force until Dec. 31, 1943.

**London, JACK** (1876-1916). American novelist. John Griffith London, born at San Francisco,



*Jack London*

Jan. 12, 1876, adventured for a time as an oyster pirate, then formed a fish patrol. Next, shipping as a sailor, in 1892-93 he visited China and Japan and hunted seals in Bering Sea. He then tramped through the U.S.A. and Canada. During the Russo-Japanese war of 1904-05 he was a war correspondent. He died in California, Nov. 22, 1916. Of his many stirring books of adventure the best known are *The Call of the Wild*, 1903; *The Sea Wolf*, 1904; *White Fang*, 1907; *Burning Daylight*, 1910. His short stories were masterly; he also made contributions to socialist literature; e.g. *The Iron Heel*, 1907.

**London Airport.** The official name for the international commercial airport opened by the British ministry of Civil Aviation, 1946. It is in the district formerly known as Heathrow, situated in Middlesex, 14 m. W. of the centre of London, between the Bath and Great South West roads; the nearest towns are Feltham and Hounslow (Heston and Isleworth borough). In its final form, with nine runways all capable of taking the heaviest of land aircraft, the airport is planned to absorb a large area north of the Bath road, the terminal and control buildings to be sited in the centre of the landing area. See Airport.

**London and North Eastern Railway.** British railway group which existed from 1923 to 1947. It comprised the earlier Great Northern, Great Eastern, Great Central, North Eastern, Hull and Barnsley, North British, and Great North of Scotland rlys. The London termini were King's Cross, Marylebone, and Liverpool Street, and among the main line stations were Waverley (Edinburgh), York, Newcastle-on-Tyne, Norwich, Nottingham, and Sheffield. The company owned the locomotive works at Doncaster, Darlington, Gorton (Manchester), Stratford (London), Cowlands (Glasgow), and Inverurie (Aberdeenshire). Locomotives were coloured green and coaches brown, but the engines drawing stream-lined trains were blue. The L.N.E.R. was the first British rly. to introduce a stream-

lined train (Silver Jubilee, 1935), and to build cinema cars for showing news programmes. The company operated nearly 17,000 m. of track. On Jan. 1, 1948, it was incorporated in British Railways. See Railways.

**London Basin.** Geological and geographical term used for the roughly triangular area lying between the chalk ridges of the N. Downs and Chiltern Hills, and containing the valleys of the Kennet and lower Thames. The general geological structure is that of a broad trough (syncline) which is pitching gently to the E. The chalk, underlain by the impervious gault clay (see Cretaceous system) forms the outside of the basin, and passes below London from one side to the other. It is overlain by Tertiary sands and clays which form an impervious layer above the chalk. The chalk is much fissured, and receives water draining from the N. Downs and Chilterns. This water, trapped between the two impervious beds above and below, flows down under London and has been extensively tapped by artesian wells.

The general shape of the London basin is the result of folding earth movements. At the close of the Cretaceous period the chalk was up-arched over the Weald and down-folded to N. and S., so forming the London and Hampshire basins on either side. Tertiary deposits — Thanet sand, Reading beds, London clay, and Bagshot sands, all of Eocene age — were then deposited in the down-warped areas. Further earth movements during the Tertiary period then further accentuated the earlier folding.

The area is still slowly moving and tilting S.E. It has been established by geodetic levelling that, since 1860, there has been a lowering of the ground surface at Harwich of about 2 ft. The various deposits in the basin give rise to variety in scenery. To the N. and S. are rounded chalk hills with open fields and beech woods. In the Aldershot area the Bagshot sands form heath-lands with conifers, heather, and gorse; the London clay and Reading beds produce heavy soils suitable for arable land, oak, and elm. The clays are used locally for brick making. Extensive flat terraces on either side of the Thames carry roads and rlys. Their gravel beds have been exploited for building material, and where their surface is silt or clay they carry market

gardens or farms. See Cretaceous System; London Clay; Tertiary System. **Gilbert Wilson, Ph.D.**

**London Bridge.** Chief of the Thames bridges. Designed by John Rennie (d. 1821), whose two sons supervised the work, it extends from Adelaide Place and King William Street, E.C., to Borough High Street, Southwark, S.E. The first pile was driven March 15, 1824, and William IV opened the bridge, Aug. 1, 1831. It is built of granite, is supported by five semi-elliptical arches, the central arch having a span of 152½ ft., and is 928 ft. long and 63 ft. wide, the original width of 54 ft. having been increased by corbelling out in 1903-04. The total cost, including approaches and widening, was £2,566,268.

Its immediate predecessor, also of stone, was built on the site of a wooden bridge, believed to have been built by the Romans. Peter

stroyed in 1832, and the piles were pulled up, many thousands of Roman coins and medallions, with examples of Roman pottery and tiles, were discovered. Beneath old London bridge, in 1582, Peter Morris, a Hollander, erected waterworks, which existed until 1822. London bridge rly. station is on the S. side, and on the N. side of the river are Fishmongers' Hall, west, and Adelaide House, east. *Consult* Chronicles of London Bridge, by An Antiquary, 1862.

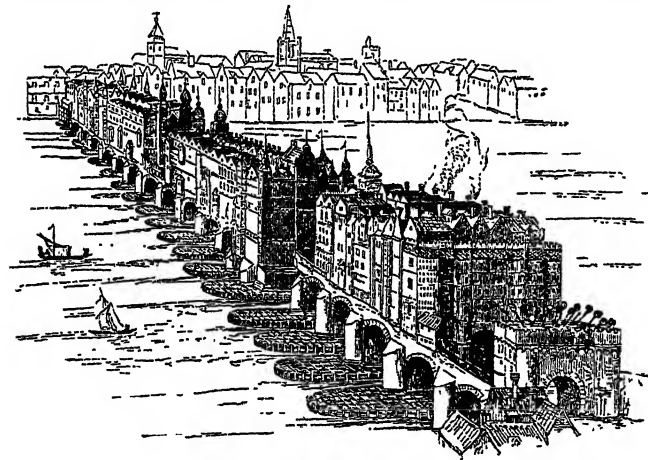
**London Clay.** A stiff blue clay of Lower Tertiary (Eocene) age which occurs in the London and Hampshire basins of S.E. England. It varies from about 600 ft. thickness in Essex to 50 ft. at Newbury and thins out altogether farther W. The thick clay bed acts as an impervious covering to the chalk, which is the artesian water-bearing formation underlying London.

The physical characters of the clay allow it to be easily tunnelled, which has permitted the development of tubular railways. See London Basin; Tertiary System.

**London County Council.** Administrative body set up in 1888 to manage the affairs of the newly created county of London. It replaced the Metropolitan Board of Works. It consisted of 19 aldermen, elected for six years, and 118 councillors, elected every three years, in the first week of March. In 1918 the number was raised to 124 elected and 20 aldermen.

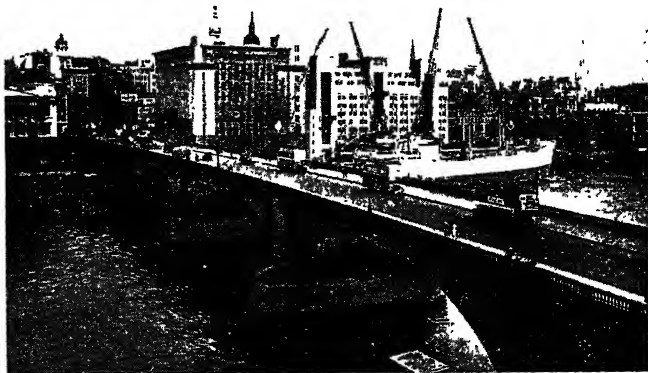
The council as a whole meets every fortnight, but it does most of its work through committees. It has a chairman, a vice-chairman, and a deputy chairman, and a large staff of paid officials. Lord Rosebery was its first chairman. The offices were in Spring Gardens; Victoria Embankment; and elsewhere, until the London County Hall was erected on the right bank of the river, nearly opposite the houses of parliament.

General elections for councillors are held every three years. For electoral purposes the parl. constituencies form multiple-member council constituencies. Elections are usually fought on political party lines, as in national elections. From 1889 to 1907, with the exception of the years 1895-98, the Progressives (Liberals) had a large majority and controlled the council, but from 1907 to 1934 the position was reversed and the Municipal Reformers (Conservatives) were in power. Then came a Labour-Socialist majority, maintained at elections in 1937, 1946, and 1949 (there were no elections during the Second Great War).



of Colechurch began it in 1176. Completed in 1209 by a Frenchman named Isambert, this bridge stood E. of the existing structure, in a line with Fish Street Hill. It had 19 arches built upon piles of elm, surrounded by wooden stielings. On fortified gates at each end heads of traitors were exposed on spikes. Wooden houses on each side were removed in 1758. Between the 13th and 14th piers from the city side was a drawbridge. In the centre was a chapel, dedicated to S. Thomas of Canterbury. Peter of Colechurch was buried in this chapel. N. of the drawbridge stood the famous Non-such House (q.v.).

Old London bridge, as it is called, was the only bridge over the Thames until 1739-50, when the first Westminster bridge was constructed; and when it was de-



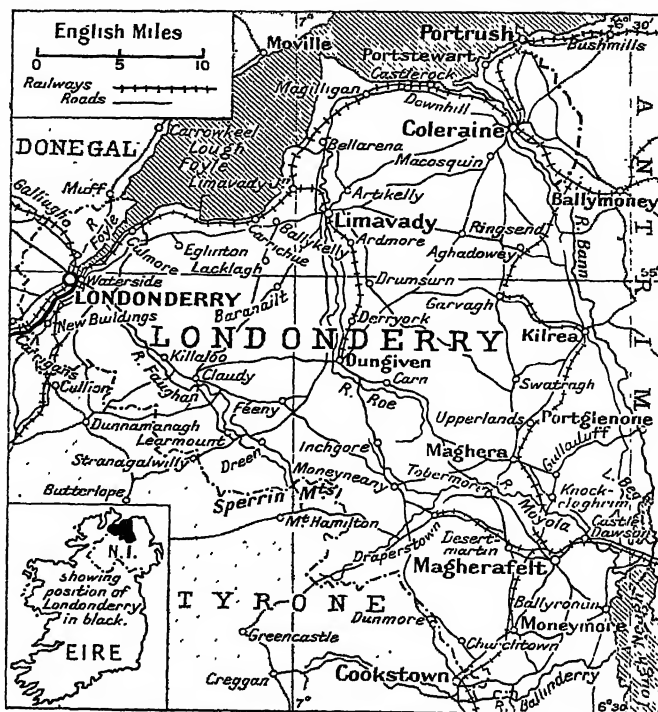
London Bridge from the south-east. On its right is Adelaide House, above which can be seen the tops of the Monument and S. Magnus; on left is Fishmongers' Hall. Top, left, from an old engraving, the bridge as it appeared about 1616. Five arches across was the drawbridge. On the gate are seen the heads of men condemned as traitors

The council is responsible throughout the whole administrative co. (including the city of London) for education (primary, secondary, and adult); town-planning and the regulation of buildings; maternity and child welfare and ambulance services; the Londoners' meals service (civic restaurants); main drainage and Thames embankment walls; licensing places of entertainment; the provision of homes for the aged and infirm, and the welfare services for handicapped persons.

Outside the city it looks after Thames bridges, and inspects shops, weights, and measures. The council in common with the City corporation and the metropolitan borough councils has power to provide open spaces and housing, but its powers are much wider in that they relate to the whole administrative co. It may, moreover, provide open spaces and housing outside the co.

Annual expenditure of the council is of the order of £40 millions, of which nearly half is spent on education. The aggregate capital expenditure up to 1947 was nearly £200 millions, and net debt outstanding at March 31, 1947, was nearly £80 millions.

**Londonderry.** County of N. Ireland. With a coast-line on the N., it has an area of 804 sq. m. The chief rivers are the Roe, Bann, Foyle, Moyola, and Faughan. The surface is level near the coast, rising to considerable heights in the S., where are the Sperrin Mts. (1,200 ft.). Lough Neagh is on its S.E. border and Lough Foyle on the N.W. Londonderry, or Derry, is the chief town; other places are Coleraine, Limavady, Dungiven, Moneymore, and Magherafelt. On the coast are the watering-places of Portstewart, Castlerock, and Downhill. The county took the



Londonderry, N. Ireland. Map of the county on the north coast of Ulster

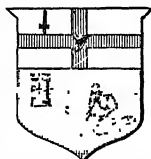
prefix of London when in 1609 much of the land, taken from the O'Neills, was made over to the corporation of the City. Later much land vested in the Irish Society of London and London livery companies was sold. Londonderry elects an M.P. to the British house of commons and four to the N. Ireland parliament. There are castles at Dungiven and elsewhere; Dungiven had also an abbey. Pop. 142,736.

**Londonderry.** City, county borough, and seaport of co. Londonderry, N. Ireland, also the county town. Known locally as Derry, it stands on a hill near where the Foyle falls into Lough Foyle, 95 m. N.W. of Belfast, being on the west, or Donegal, side of the river. It is well served by rlys. The city is still surrounded by walls with gates.

The chief buildings are the cathedrals. S. Columba's, Protestant,

dates from the 17th century, but was restored and enlarged in the 19th. The R.C. cathedral of S. Eugenius is modern. There is a guildhall. Foyle College dates from 1617, and there are other colleges and schools. A monument commemorates the siege (v.i.) of 1689. The chief industries are flour milling, distilling, shipbuilding, tanning, and bacon curing; another important one is making linen clothes. The port has quays on both banks of the river, and good accommodation for vessels. Trade is mainly in agricultural produce, and there is steamer communication with Glasgow, Liverpool, and Belfast. One member is elected to the parliament of N. Ireland.

At Derry, a corruption of the Irish *Doire*, meaning the place of oaks, S. Columba founded a monastery in the 6th century. It became the seat of a bishop, who in the 12th century built a magnificent church, pulled down in 1600. The bishopric is known as that of Derry and Raphoe. The industrial prosperity of the town did not begin until it had become the prop-



Londonderry arms



Londonderry, Northern Ireland. Carlisle Bridge over the river Foyle, with S. Columba's Cathedral in the background

erty of the Irish Society of London. In 1689 it was besieged by the troops of James II as a Protestant stronghold. Its present inhabitants are almost equally divided between Protestants and Roman Catholics, and affrays between them have been frequent. There was serious rioting in 1920. The U.S. government constructed here during the Second Great War one of the best equipped naval bases in Europe; it cost several million pounds and was completed in six months, being put into commission on Feb. 5, 1942. From Londonderry U.S. destroyers and corvettes escorted convoys across the Atlantic in cooperation with the Royal Navy. Pop. 47,813.

**Londonderry, SIEGE OF.** Enterprize of James II and the Irish Jacobites in 1689. From the town, the chief stronghold of N. Irish Protestantism, James's garrison had been withdrawn, and 13 apprentices defied him by closing the gates, Dec. 7, 1688. James advanced in April with a large force, and Robert Lundy, the military governor, fled after advising capitulation, but a cry of no surrender became the watchword of the city. A clergyman, George Walker, was chosen governor, and siege operations began on April 19. William III's government had on March 30 planned relief, but mismanagement caused much delay; meanwhile famine and disease reduced Derry to the utmost straits. In mid-June a fleet entered Lough Foyle with provisions and four regiments under Maj.-Gen. Kirke, but they waited six weeks outside the harbour. Ordered at last to attack, the ships broke the boom, July 30, and raised the siege, which had lasted 15 weeks.

**Londonderry, MARQUESS OF.** British title borne by the family of Vane-Tempest-Stewart. There was an earl of Londonderry from 1623, the title being given to Thomas Ridgeway, a Devon man, who had secured land in Ulster. The title became extinct when his descendant Robert, the 4th earl, died in 1714. In 1726 the earl's son-in-law, Thomas Pitt, was made earl of Londonderry, but the title again lapsed in 1765.

In 1789 Robert Stewart, M.P. (1739-1821), of Mount Stewart, co. Down, was made Baron Londonderry, being raised in 1796 to earl and in 1816 to marquess. His son was prominent under the courtesy title of Viscount Castlereagh (*q.v.*). The latter's half-brother, Charles William, the 3rd marquess (1778-1854), was a soldier and a diplo-

matist. He married the heiress of the families of Vane and Tempest, and obtained rich estates, including collieries, in Durham. He was made a peer of the U.K. as Baron Stewart in 1814 and in 1823 Earl Vane, a title that passed to his son by a second marriage.

In 1884 the title came to Charles, 6th marquess (1852-1915). Born July 16, 1852, and educated at Eton and Christ Church, Oxford, he was Conservative M.P. for Down from 1878 until he inherited the title. He was lord-lieutenant of Ireland, 1886-89; postmaster-general, 1900-02; and president of the board of education, 1902-05, also lord president of the council from 1903. He died Feb. 8, 1915.

His son Charles Stewart Henry (1878-1949) became 7th marquess. Born May 13, 1878, he went to Eton and Sandhurst, and was Conservative M.P. for Maidstone, 1906-15. Under-secretary for air, 1920-21, he took office in the first government of N. Ireland as minister of education and leader of the senate. Returning to Westminster, he became first commissioner of works, 1928-29, and again in 1931; secretary for air, 1931-35; lord privy seal and leader of the house of lords, 1935. He wrote *Ourselves and Germany*, 1938; *Wings of Destiny*, 1943. He was also known for his receptions at Londonderry House, Park Lane, on the occasions of the opening of parliament. Dying Feb. 11, 1949, he was succeeded by his son Edward (b. 1902), 8th marquess. The family seats of the marquess are Wynyard Park, Durham, and Mount Stewart, Down. An eldest son is known as Viscount Castlereagh.

**Londonderry Air, THE.** Irish folk tune first published 1855, in a collection made by George Petrie (*q.v.*), Irish antiquary. Its beautiful phrasing and haunting melody gave it immediate popularity, and many lyrics have been written to the tune, notably by A. P. Graves and F. E. Weatherly. It has also been adopted as a hymn-tune, and Stanford introduced it into his 1st Irish Rhapsody.

**London Gazette, THE.** Official organ of the British government and the appointed medium for state proclamations, orders in council, and diplomatic, colonial, services, civil, and ecclesiastical appointments. It is also the medium for advertisements required by statute. Published Tuesdays and Fridays, the ordinary issues may be augmented by supplements. This is a continuation of

the Oxford Gazette which appeared Nov. 14, 1665, during the Great Plague, the present title beginning with No. 24 of Feb. 5, 1666, on the return of Charles II to London. Sir Richard Steele was an editor. Down to 1696 an edition in French was issued. Published for many years at ls., the gazette has cost 2s. since 1920. Similar publications for Scotland and N. Ireland appear as *The Edinburgh Gazette* and *The Belfast Gazette*.

**London Group.** Body of British artists. Owing its origin to the amalgamation of several small groups of painters including the Camden Town group and the Allied Artists' Association, just before the First Great War, it held its first exhibition at the Goupil Gallery, London, in March, 1914. Van Gogh and Gauguin were exerting a predominating influence on English painters, though Sickert had asserted an impressionism derived from Manet and Degas in his Camden Town interiors and music-hall scenes. The London Group became the focus of progressive work, regular exhibitors including Sickert, Spencer Gore, Charles Ginner, Paul and John Nash, C. R. W. Nevinson, and Mark Gertler. Wyndham Lewis and Jacob Epstein joined the group, which continued to hold annual exhibitions at various London galleries. At a retrospective exhibition at the Leicester Galleries, 1928, a remarkable collection of paintings and sculpture was shown. In 1943 the group organized its fifth wartime exhibition at Burlington House, when younger artists whose work attracted attention were John Tunnard, Eileen Agar, and Victor Pasmore. See New English Art Club.

**London Hippodrome.** Playhouse at the corner of Cranbourn St. and Charing Cross Road, London, W.C. It was opened Jan. 15, 1900, as a variety theatre, and was long a centre of circus and aquatic entertainment. Remodelled and enlarged, it became well known for revues and musical comedies, *e.g.* *Hello, Ragtime!* 1912; *Brighter London*, 1923; *Hit the Deck*, 1927; a series starring Bobby Howes; another with Vic Oliver; *The Lisbon Story*, 1943; *Perchance to Dream*, 1945. The theatre seats 1,340.

**London Hospital.** Institution founded as a charity in 1740, situated in Whitechapel Road. Ministering to the needs of the vast industrial population of the E. half of the capital, it is the largest general hospital in the U.K. It maintains 638 beds with 269 beds





London Hospital. Main buildings in Whitechapel Road

at an annexe. Accident and urgent cases are admitted at all times. Special departments exist for aural, cardiac, dental, dermatological, gynaecological, neurological, neurosurgical, ophthalmic, orthopaedic, paediatric, psychiatric, and thoracic surgery. There are training schools for nursing and midwifery, physiotherapy and radiography. The London Hospital medical college is a medical school of the university of London. Attached to the hospital is an organization with a staff of nurses all trained there and available for private cases at moderate fees. In 1946, 12,605 in-patients were treated and out-patients made 443,575 attendances.

**London Irish Rifles.** Territorial regiment of the British army. Formed in 1859 as a volunteer unit, the regiment first saw active service in the S. African War of 1899-1902. When the volunteers were organized into the Territorial Force in 1907, the London Irish Rifles became the 18th battalion of the London Regiment and served in France and Flanders. They earned distinction in 1915 at Festubert and at Loos, where they went into the attack kicking a football. Two battalions served in the Second Great War with the 56th div. in Africa, Sicily, and Italy. When the Territorial Army was reformed in 1947, the London Irish became a motorised infantry regiment of the 56th (London) armoured div.

**London Library.** Subscription library opened at 40, Pall Mall, London, S.W., May 3, 1841, with a collection of about 3,000 volumes. It originated in an agitation set afoot by Carlyle and strongly supported by eminent men, with the object of acquiring good books in all departments of knowledge which would be available to members at their own homes.

premises in Duke Street, was purchased in 1880. The premises were rebuilt in 1896 and extensions were added in 1913 and 1934, though some of the latter work was destroyed by a German bomb in 1944.

By 1946 the number of books available had increased to over 475,000. The library, which is under distinguished patronage and is governed by a committee consisting of a president, five vice-presidents, and 24 other members, rendered considerable assistance to government departments in quest of information during both Great Wars. C. J. Purnell was appointed secretary and librarian in 1940 in succession to Sir C. T. Hagberg Wright.

**London, Midland, and Scottish Railway.** British railway group which existed from 1923 to 1947. It comprised the former London and North Western, Midland, Lancashire and Yorkshire, Caledonian, North Stafford, Furness, and several smaller rlys. The London termini were Euston, Fenchurch St., and St. Pancras, and the company's principal locomotive works were at Crewe and Derby. Locomotives and passenger coaches were painted a maroon colour. With 20,000 track miles, this was Great Britain's largest

On May 15, 1843, a reading room was opened for the use of members. In 1845 the library was removed to what was formerly known as Beauchamp House, St. James's Square; the freehold of which, with that of adjacent pre-

railway system before nationalisation and served such widely separated towns as Bournemouth, Southend-on-Sea, Gloucester, Liverpool, Holyhead, Manchester, Carlisle, Stranraer, Edinburgh, Dundee, and Thurso. Between Dalwhinnie, Inverness-shire, and Dalnaspital, Perthshire, the line runs 1,484 ft. above sea level, the highest point on any main line in Great Britain. On Jan. 1, 1948, the L.M.S. was incorporated in British Railways. See Railways.

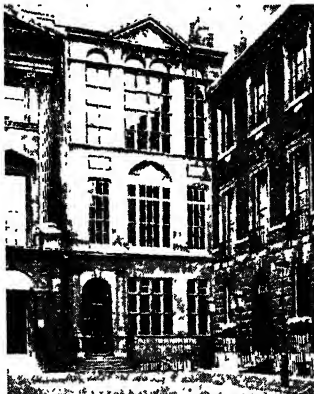
**London Museum.** Institution founded on the lines of the museum in the Hotel Carnavalet, Paris, to serve as an object lesson in the history of the English metropolis. It was founded in 1911 to commemorate the coronation of George V. Sir Guy F. Laking was director, 1911 to 1919. When the London county council refused to provide a home for the museum in their new county hall, King George, in addition to being a contributor, made over a set of apartments at Kensington Palace as a temporary home for the nucleus of the collection, and formally opened it in person, March 21, 1912.

Lancaster House (*q.v.*), presented to the nation in 1912 by Sir W. H. Lever (later Lord Leverhulme), was taken over by the government in 1913, and the exhibits having been removed here, the museum was reopened in 1914, but was closed during the First Great War. One of the early collections acquired by the trustees was that known as the Hilton Price collection of London antiquities, and this, having been supplemented by other purchases, gifts, and bequests, illustrates London and London life from prehistory. The museum was closed at the outbreak of the Second Great War, but some exhibits were on view in 1942. It was closed again in 1944 owing to flying bomb attacks. In 1948 a temporary home was again found at Kensington Palace.

**London Opera House.** Theatre in Kingsway, London. It was designed by Bertie Crewe and erected by Oscar Hammerstein (1847-1919) for the production of grand opera. He opened it on Nov. 13, 1911, with Jean Nougue's opera. Quo Vadis?, but his efforts were not crowned with success and the building was closed in 1913, to be reopened in 1914 as a theatre of varieties. It was later taken over by Sir Oswald Stoll and renamed The Stoll Picture Theatre, providing cinema entertainments. For its subsequent history, see Stoll Theatre.



London Irish Rifles badge



London Library. The building at the north-west corner of St. James's Square

**London Passenger Transport Board.** Organization formed in 1933 to coordinate the passenger services of London. On Jan. 1, 1948, it became part of the nationalised transport system under the title London Transport Executive. See London Transport.



London Pride.  
Spray of flowers

**London Pride** (*Saxifraga umbrosa*). Perennial evergreen herb of the family Saxifragaceae. It is a native of N. Spain, Portugal, Corsica, and Ireland. The leathery, broad, oval leaves grow in a rosette, from which the branched, leafless flowering stem arises. The flowers have reddish sepals and white petals dotted with red. It is also called

None-so-pretty and S. Patrick's cabbage.

**London Regiment.** Former Territorial regiment of the British army. It dated from 1908, when all London Territorial battalions were united into one regiment of 26 battalions. To maintain the old connexion of the Royal Fusiliers with London, the first four battalions were affiliated to that regiment, and retained the name fusilier in their title, e.g. 1st London (Royal Fusiliers), or officially 1st (City of London) battalion the London Regiment (Royal Fusiliers). The remaining battalions were designated County of London, e.g. 9th (County of London), or Queen Victoria's Rifles.

The 1st London was raised in 1859, being then known as the 19th Middlesex; the 2nd battalion, also raised in that year as the 46th Middlesex, became the 23rd Middlesex in 1880, and soon afterwards the 2nd (volunteer) bn., Royal Fusiliers. The 3rd bn. was raised in 1859, and the 4th originated from the Tower Hamlets regiment of the London train bands. The 5th bn., or London Rifle Brigade (*q.v.*), dated from 1859, also the 6th Rifles (formerly Surrey). The 7th and 8th, known as the Post Office Rifles, both served in Egypt, 1882, and in S. Africa; the 9th was the Queen Victoria's Rifles (*q.v.*); the 10th the Hackney; the 11th the Finsbury Rifles; the 12th the Rangers; the 13th the Princess

Louise's Kensingtons; the 14th the London Scottish (*q.v.*); the 15th the Civil Service Rifles; the 16th the Queen's Westminster Rifles. The 17th, formerly the 2nd Tower Hamlets Volunteer rifle corps, became the Poplar and Stepney Rifles. The 18th were the London Irish Rifles, raised in 1859; the 19th originated in the St. Pancras volunteers; the 20th (Blackheath and Woolwich) originated in the Royal Greenwich Fencibles. The 21st bn. became the 1st Surrey Rifles; the 22nd, The Queen's. The 23rd fought in the S. African War, as did the 24th, the Queen's. The 25th battalion the Cyclists, the 28th the Artists Rifles (*q.v.*).

The regiment had a brilliant record in the First Great War. On the W. front the 47th, 56th, and 58th divisions, mainly composed of London battalions, won lasting renown. Other battalions fought in Gallipoli and Palestine. Memorials in front of the Royal Exchange and in High Holborn commemorate the men who fell. In 1935 the regiment was disbanded as a separate formation, the units being attached to various regiments, though some retain their former badges.

**London Rifle Brigade.** Territorial unit of the British army. Raised in 1859 as The Prince Consort's Own Volunteers (London Rifle Brigade), it served in the S. African War of 1899-1902, and on the formation of the Territorial Force in 1907 became the 5th City of



London Rifle  
Brigade badge

London Regiment. In the First Great War battalions served in France and Flanders, taking part in the engagements around Ypres, 1915; the third battle of Ypres, 1917; and the defence of Amiens, 1918. From the storming of the Hindenburg Line, it had a distinguished share in the final battles of 1918. After the outbreak of the Second Great War, the 1st and 2nd battalions of the London Rifle Brigade became the 7th and 8th of the Rifle Brigade. The former served as motorised infantry with the 8th armoured div. in Africa and the 6th armoured div. in Italy; the latter fought in a similar way with the 11th armoured div. in France, Holland, and Germany. The London Rifle Brigade was reformed in 1947 as a motorised infantry battalion of the T.A. and affiliated to the Rifle Brigade.

*Consult History, 1921; The Rifle Brigade, 1939-45, 2 vols., 1946.*

**London School of Economics** School of the university of London. Founded 1895 through the initiative of Sidney Webb (Lord Passfield), an original member of the Fabian Society (*q.v.*), for the study of economics and related subjects, it became part of the university of London in 1900. Open equally to men and women, to matriculated students it grants degrees in economics and political science, laws, and arts (history, geography, sociology, anthropology). Non-matriculated students can study for certain diplomas and certificates, and may also under certain conditions attend classes and lectures (day and evening) without necessarily taking examinations. The school's library covering political and economic science, international law, and comparative legislation is open, by permission of the director, to any person desiring to read there. Webb was professor of public administration here 1912-27. Sir W. (later Lord) Beveridge was director 1919-37. Other members of the staff have included B. Malinowski, E. Cammaerts, R. H. Tawney, Eileen Power, A. J. Toynbee, H. J. Laski, C. K. Webster, H. B. Lees-Smith. The school is in Houghton Street, Aldwych, London, W.C.2.

**London Scottish.** Territorial regiment of the British army. Formed in 1859 as the London Scottish Rifle Volunteers, it is recruited in London, in normal times solely from men able to prove Scottish nationality by birth, descent, or property ownership. Its first active service was in the S. African War, when a company was attached to the Gordon Highlanders and a detachment served with the City Imperial Volunteers. When the Territorial Force was formed in 1907, the London Scottish became the 14th battalion of the London Regt.



London Scottish  
badge

Three battalions were raised for service in the First Great War, the first battalion being the Territorial infantry that went earliest into action against the Germans, at Messines, Oct. 31, 1914. The second battalion served in France, the Balkans, and Palestine. In 1920 the regiment was reformed as a single battalion, but in 1938 a second

infantry and a heavy A.A. battalion were raised.

In the Second Great War the 1st battalion served in Persia, N. Africa, Sicily, and Italy, while the 3rd (A.A.) was in Egypt and Italy. The 2nd battalion became a reserve and draft producing unit, most of the personnel passing through its ranks going to the 51st Highland div. Nearly 10,000 men joined the regt. In 1947 the London Scottish became a single-battalion regiment of the T.A., affiliated to the Gordon Highlanders. Its hodden grey kilt is the tweed of the Elcho family, Lord Elcho, later earl of Wemyss, having been its first colonel.

**London Society.** THE. Organization established in London in 1912 "to unite all Londoners who see the necessity for stimulating a wider concern for the beauty of the capital city, for the preservation of its old charms, and the careful consideration of its new development." Offices, 82, Pall Mall, S.W.1.

**London Stone.** London relic. A solid block of oolite, such as that used by the Romans in their

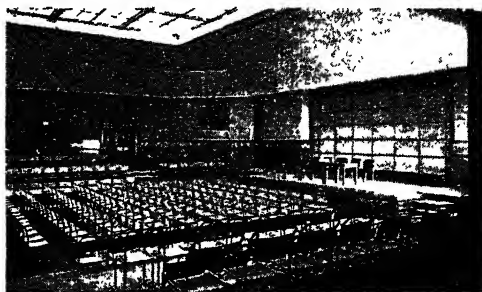
of the set composed in London by Haydn, was first performed in 1795. The thematic material of the final movement is based on the Westminster chime. (2) Symphony by Vaughan Williams, first performed at Queen's Hall, London, 1914. It suggests various aspects of the capital in moods ranging from sombre to gay, from the peace of old squares to the swirl of crowds and traffic.

**London Transport.** Organization responsible for the running of the passenger services of London, its full title being London Transport Executive. It is the name taken by the London Passenger Transport Board when that body became on Jan. 1, 1948, part of the nationalised transport system. The L.P.T.B. was formed by Act of parliament in 1933 under the chairmanship of Lord Ashfield to coordinate the underground rlys., tramways, trolley bus, omnibus, and coach services running within a radius of roughly 30 m. of Charing Cross, previously operated by 162 companies and local authorities. The principal objects in the formation of the board were to eliminate wasteful competitive services, and to improve passenger transport facilities in the area under its authority. The amalgamation included the London General Omnibus Co., the Metropolitan and Metropolitan District rlys., the London Electric rlys., and the L.C.C. tramways.

During the Second Great War the L.P.T.B. services ran through bombs, flying bombs, and rockets; 181 members of the staff were killed on duty, 1,867 were injured. Vehicles of the board were damaged on nearly 9,000 occasions.

The head office of London Transport is at 55, Broadway, London, S.W.1. See Bus; Green Line; Motor Coach; Underground Railway, etc.

**London University.** British educational body. It is today the largest university in the world. In the session 1947-48, over 50,000 students were studying for its degrees and diplomas, or were taking courses under its teachers. It was founded in 1836 for the purpose of examining and conferring degrees only, and was un-



London University. The William Beveridge room, in the great building in Bloomsbury. In this hall degrees are conferred. See also frontispiece to Vol. 6

sectarian. The intention was to make University College, founded in 1825, the university, but there was much opposition, and the two were kept distinct, though University College taught for the degrees of London university. It became incorporated in 1900.

In 1854 the right to confer medical degrees was granted to the university. In 1858 its degrees, previously confined to members of colleges affiliated to it, were thrown open to all. From that time dates their great popularity. In 1868 the university began to

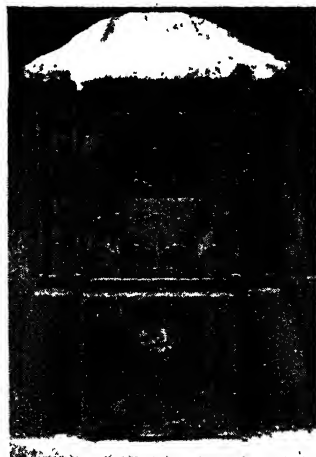


London University arms

send a member to parliament; in 1880 it gave women access to its degree examinations; and in 1900 it was reconstituted as a teaching body also, under an Act of 1898.

A royal commission, appointed to inquire into the provision of university education in London, recommended in its report (1913) drastic changes leading to the closer association of all the capital's institutions for higher education. The question of a building for the university as a whole was also considered. The govt. in 1920 offered on conditions a site in Bloomsbury, which was accepted by the university. The foundation stone of the great new administrative building was laid by George V in 1935, the main part of the building, with the vast central tower housing the university library, being completed in 1938. The site was also planned to accommodate the School of Oriental and African Studies, Birkbeck College, the Institute of Historical Research, and the Institute of Advanced Legal Studies, together with the university extension department.

London university now consists of incorporated colleges and departments, schools of the uni-



London Stone, Cannon Street. The old stone, reputed to be a Roman milestone, seen behind the grille

buildings, it is set in a large stone case, protected by an iron grille, and let into the S. wall of S. Swithin's church, Cannon Street, E.C. It originally stood on the S. side of the street, opposite to its present position, which it has occupied since 1798. According to Camden, it was a milliarium or milestone from which the British high roads radiated, and their mileage was reckoned, similar to one in the Forum at Rome.

**London Symphony.** Name of two orchestral compositions. (1) Symphony No. 104 in F, the 7th



versity, central activities such as the research institutes, and institutions having recognized teachers. Incorporated colleges are University and King's. Schools of the university, a feature dating from 1900, include the Imperial College of Science and Technology, the School of Oriental and African Studies, Queen Mary (formerly East London) College, Goldsmith's College, Birkbeck College, London School of Economics, and South-Eastern Agricultural College, and three colleges for women only—Bedford, Royal Holloway, and Westfield. There are theological colleges, medical schools attached to the great London hospitals, and other institutions, including the Lister Institute of Preventive Medicine. Several polytechnics and the Trinity and Guildhall Schools of Music have recognized teachers. There are halls where students can reside and the ultimate aim is to surround the university with a number of hostels for students, thereby making it predominantly residential.

The university faculties are theology, arts, law, music, medicine, science, engineering, and economics, the last-named including commerce and industry, as well as political and social science. The university is governed by a senate and convocation, and the work of the senate is delegated to three councils—academic, external, and extension. The colleges of the University are noticed separately.

**London Wall.** London thoroughfare. Once called Currier Row, it runs W. from Old Broad St. to the N. of Wood St., E.C., crossing Moorgate at its junction with Finsbury Pavement. Part of the old City wall once formed its N. side, where the original church of S. Alphege was founded in the 11th century, being rebuilt on the S. side in 1777. The church was demolished in 1923, only the porch remaining. Close to Old Broad St. is the church of All Hallows-on-the-Wall, founded in the 13th century and rebuilt in 1767. It suffered slight damage in aerial attacks on London during the Second Great War.

The Roman fortification also known as London Wall was built in the 2nd century A.D., restored more than once in the Middle Ages, and was in existence in the middle of the 18th century. Remains may be seen in London Wall, the churchyard of S. Giles's, Cripplegate (destroyed by bombs), Tower Hill, and behind Stationers' Hall and Amen Court. Damage done by

bombing to various layers of buildings superimposed on London Wall afforded fresh opportunity for its exploration. In 1947 digging was begun on the western wall from the angle bastion where the wall turns S. near S. Giles's, Cripplegate, and runs S.S.W. towards Falcon Sq. Excavations were also made near Birchin Lane and in Gutter Lane, Cheapside, behind the wrecked Saddlers' Hall.

**London Wall.** Comedy by John van Druten. Produced at the Duke of York's Theatre, London, May 1, 1931, this play was notable for its characterisation, and was set in a solicitor's office in the City of London. It ran for 170 performances, Frank Lawton and Marie Ney taking the chief parts.

**Loch.** Loch of Scotland. An arm of the firth of Clyde, it extends for 17 m. in a N.N.E. direction between Argyllshire and Dumbartonshire. Its extreme breadth is about 2 m. A rly. runs N. from Garelochhead along its E. shore. past Arrochar at the head. During the Second Great War Loch Long was a training base for submarine crews. Commandos were also trained there in combined operations, and rehearsals for the abortive Dakar landing were carried out on the water.

**Long, WALTER HUME LONG, 1st Viscount (1854-1924).** British politician. He was born at Bath, July 13, 1854, of an old Wiltshire family, and was educated at Harrow and Christ Church, Oxford. He entered the house of commons in 1880 as Conservative M.P. for N. Wilts;

from 1885 he represented Devizes; from 1892 the W. Derby div. of Liverpool; from 1900 S. Bristol; from 1910 the Strand; and during 1918-21 St. George's, Westminster.

Long's first ministerial appointment was as parliamentary secretary to the local government board in 1886. He was president of the board of agriculture, 1895-1900, and of the local government board, 1900-05; then he became chief secretary for Ireland, but his party lost power. President of the local government board in the 1915 coalition, he was transferred to the colonial office on Asquith's retirement in 1916. He was first lord of the admiralty 1919-21, and then received a viscountcy. He published *Memories*, 1923.



1st Viscount Long,  
British statesman  
Russell

His eldest son, Walter, was killed in Greece in the First Great War; so at Lord Long's death, Sept. 26, 1924, he was succeeded by his grandson, Walter Francis David Long (1911-44). Educated at Eton and Sandhurst, the 2nd viscount joined the Grenadier Guards, and was A.D.C. to the governor-general of New Zealand. Retiring to become chairman of the Ocean Trust Co., he rejoined in the Second Great War, and was killed in action, Sept., 1944, the title passing to his uncle, Richard (b. Aug. 22, 1892).

**Long, GEORGE (1800-79).** An English scholar. Born at Poulton, Lancs, Nov. 4, 1800, he was professor of Greek, 1828-31, and of Latin, 1842-46, at University College, London, and classical lecturer at Brighton College, 1849-71. Long was one of the founders of the Royal Geographical Society, edited the *Penny Cyclopaedia*, 1833-46, and started the *Bibliotheca Classica*. Among his publications are *Two Discourses on Roman Law*, 1847, translations of *The Meditations of Marcus Aurelius*, 1862, and the *Discourses of Epictetus*, 1877. He died on Aug. 10, 1879.

**Long, HUEY PIERCE (1893-1935).** U.S. politician. Born at Winnfield, La., Aug. 30, 1893, he became a travelling salesman at 16. Later a lawyer, he was a member of the U.S. senate from 1924. Elected governor of Louisiana in 1928, he gained virtual control of that state. In 1934 the legislature passed 44 bills through all stages in 2 hrs. 20 mins.

A sinister instrument was the state bureau of criminal investigation, used by Long for political espionage. He brought under his personal control the legal system, militia, police, fire, and educational departments. To many classes he brought material benefits, but these were invariably bribes; and, although he thus increased the state debt to \$35,000,000, he aroused little opposition, as he had relieved 70 p.c. of the pop. from taxation. In 1935 an association formed to overthrow his regime was disposed of by means of machine-guns.

Long decided to stand for the presidency, and started a "share the wealth" agitation which organized clubs in every state. These planned to limit personal fortunes to £200,000 and to guarantee £1,000 to "every deserving family." Becoming a bitter opponent of Roosevelt, he once spoke for 15½ hrs. in the

senate in an attempt to talk out the bill for continuing the national industrial recovery act. Due to be called before congress to answer charges that Louisiana was no longer administered by republican forms, he was, before the inquiry could begin, shot in the state house at Baton Rouge on Sept. 9, 1935, by Carl Weiss, a young physician, and died next day. Known by his nickname of "The Kingfish," Long was an astute politician, and possessed personal magnetism, but politically was little better than a gangster in office.

**Long Acre.** London thoroughfare. Running N.W. from Cranbourn Street to Drury Lane, W.C., and crossing Endell Street and Bow Street, it was first called The Elms and then Seven Acres. Coachmakers began to settle here in the 17th, and motor car makers in the 19th centuries. A large building at the S.E. corner of Endell Street, now a printing house, was originally built in 1847 as S. Martin's Hall, for John Hullah's chamber concerts; burnt in 1860, it was reconstructed in 1862; known 1867-75 as the Queen's Theatre; next became a gymnasium; and was then converted into business premises. On Jan. 28, 1918, the building, then occupied by Messrs. Odhams, was bombed during a night attack by German aeroplanes, 28 persons being killed and many injured. Cromwell, Nicholas Stone the sculptor, and John Dryden lived in Long Acre; Samuel Butler died in Rose Street at the S.W. end of this thoroughfare; and Taylor the Water Poet kept an alehouse in Hanover Court, formerly Phoenix Alley. The Covent Garden underground rly. station is situated in Long Acre.

**Longan.** Evergreen tree closely allied to the litchi (*q.v.*).

**Long Beach.** A city of California, U.S.A., in Los Angeles Co. Situated on the Pacific Ocean, 28 m. S. of Los Angeles, it is served by the Southern and Union Pacific rlys. and an airport. It was first settled in 1840, became a city in 1897, and is now the fifth largest city of California. An excellent harbour on San Pedro Bay which is protected by three breakwaters forms part of Los Angeles harbour and with it is the home port of the U.S. Pacific fleet. Deep-sea fishing and yachting are favourite sports here, and the tourist trade flourishes. Within the city limits is the Signal Hill oilfield, discovery of which in 1921 tarted the industry largely resp on-

sible for the city's growth. Natural gas is also produced. Motor car, lorry, and aeroplane plants are also prominent among the city's industries. An earthquake in 1933 killed 120 persons and did to property damage estimated at £10,000,000. The pop., 2,252 in 1900, is now 164,271.

**Longbenton** OR BENTON. Urban district of Northumberland, England. It is virtually a suburb of Newcastle-on-Tyne, lying 4 m. N.E. of it and connected by rly. The chief occupations are at collieries and stone quarries. Pop. 14,072.

**Longboat.** Heavily built rowing boat; the largest carried by a ship. It was also fitted with mast and sails, and was used for conveying heavy cargo in seas unsuited to smaller boats. The term is now almost obsolete.

**Longbow.** A military weapon, first employed on a large scale by Edward I. It retained its supremacy on the battlefield until the introduction of firearms. Adopted from the Welsh, it became the national weapon of the English and appears to have got its name from its size, approximately the same as that of the bowman, while the ordinary bow, which was discarded soon after the introduction of the longbow, was only 4-5 ft. long. The longbow, made generally of yew or ash, shot an arrow which was slightly lighter but far longer than the quarrel of the crossbow. It could be fired three times as fast as a crossbow, and the shafts could penetrate an oak door 4 ins. thick. *See* Archery; Arms; Arrow; Bow.

**Long Branch.** City of New Jersey, U.S.A., in Monmouth co. Situated on the South Shrewsbury river and on the Atlantic coast, it is 45 m. S. of New York, and is served by the Pennsylvania and the Central of New Jersey rlys. Long

Branch began to develop as a watering-place towards the end of the 18th century, and was chartered as a city in 1904. Four presidents of the U.S.A. have made Long Branch their summer capital. Pop. 17,408.

**Longchamps** OR LONGCHAMP French racecourse and review ground. It is in the Bois de Boulogne (*q.v.*), just outside the fortifications W. of Paris. The meetings,



Longchamps. View of the stands at the French racecourse just outside Paris in the Bois de Boulogne

which include that of the Grand Prix (*q.v.*), are notable for the display of fashions they attract. Near by are the remains of the abbey of Longchamps, founded by Isabelle of France in 1256, and notorious in the 18th century for the fashionable concerts which took place within its precincts in Holy Week. The abbey was suppressed in 1792. *See* Paris.

**Longchamps, WILLIAM DE** (d. 1197). English chancellor. He was born in Normandy, the son of Hugh de Longchamps, and entered the service of Prince Richard, afterwards Richard I, on whose accession he was appointed bishop of Ely and chancellor of England. His haughty contempt for everything English and his quarrelsome disposition aroused popular hatred against him, but he was an able man and loyal to the king. When Richard left England he made Longchamps custodian of the Tower and joint chief justiciar. Longchamps soon ousted his fellow justiciar, and by his appointment in 1190 as papal legate became supreme in the Church as well as the state. He arrested the archbishop of York and defied Prince John, but was himself arrested and imprisoned. Escaping to France, 1191, he joined Richard in his German captivity and was sent back to England, where he continued his obnoxious behaviour. Richard engaged him in further negotiations, finally sending him



Longbow drawn ready for shooting

on a mission to the pope, but he died on the way at Poitiers, Jan. 31, 1197.

**Longcloth.** Plain white calico of the best quality, and woven in pieces of exceptional length. It was first made in India, and sold in England as early as 1550. In 1700 the jealousy of English makers of linen and wool caused the import of longcloth and other calicoes to be prohibited; but the prohibition did not last long, and to the end of the 19th century it was the most popular substitute for linen in the making of underwear. It is now generally replaced by softer, thinner materials.

**Long Eaton.** Urban dist. and market town of Derbyshire, England. It is 7 m. S.E. of Derby and 7 m. S.W. of Nottingham, with rly. stations, Trent being the main one. The church of S. Lawrence is partly Norman. The chief industries are the manufacture of lace, elastic webbing and braiding, upholstery, hosiery, electric cable and wiring, metal tubing, and railway carriages. Long Eaton was a village until late in the 19th century, when some Nottingham lace manufacturers transferred their businesses here. It votes in South East Derbyshire. Market day, Fri. or Sat. Pop. 26,700. Little Eaton is a village  $2\frac{1}{2}$  m. from Derby, with a rly. station.

**Longevity** (Lat. *longævus*, aged). Long duration of life. It is difficult to place a limit to the length of life of many species of plants and animals, and even in man the three score years and ten is frequently exceeded, reputed cases of individuals living to double that age being on record, e.g. Thomas Parr, a labouring man of Shropshire, who died Nov. 15, 1635, in his 153rd year; and Henry Jenkins of Yorkshire, who died in 1670, aged 169.

The longevity of man is insignificant beside that of many plants

and animals. The baobab tree is known to have lived from four to five thousand years; the *Sequoia gigantea* of California to a similar period; the giant tortoise of the Galapagos Islands has a span of life of 200 years or more, etc. The duration of life, however, of most animals is less than that of man. Attempts to rejuvenate the old were made by S. Voronoff (*q.v.*), who grafted sexual glands of higher apes in man.

The factors which influence longevity are a matter of dispute. There is little doubt, however, that environment, especially in plants, has a great influence on the span of life, and in man environment and heredity. The average mean duration of life in man rose in the 19th century by over five years in most civilized countries. In France the increase has been more marked, the average duration of life at the beginning of the 19th century being only 29 years, while it is now over 40. The study of old age (gerontology) includes the scientific and social aspects. See Age; Old Age; Life.

**Longfellow, HENRY WADSWORTH** (1807–82). American poet. Born at Falmouth, now Portland, Maine, Feb. 27, 1807, of early New England stock, he was educated at Bowdoin College, Brunswick, Maine. After studying law in his father's office, he



became professor of foreign languages at Bowdoin, 1829–34; and professor of belles-lettres at Harvard, 1836–54. He visited Europe, 1826–29; 1835–36; 1842 and 1868–69, when Oxford and Cambridge conferred honorary degrees upon him. He was twice married, in Sept., 1831, to Mary Storer Potter, who died at Rotterdam, Nov. 29, 1835; and in July, 1843, to Frances Elizabeth Appleton, the heroine of his *Hyperion*, who was burnt to death July 9, 1861, her dress having caught fire while she was sealing some packages of her little daughter's curls. Longfellow's 75th birth-

day was observed, especially in the public schools, throughout the U.S.A. He died at Craigie House, Cambridge, Mass., on March 24, 1882, and was buried at Mount Auburn. Emerson, then within a month of his own passing, looked on the face of the dead poet and said, "That gentleman was a sweet, beautiful soul, but I have entirely forgotten his name." A bust of Longfellow was placed in Westminster Abbey in 1884.

Longfellow's work was many-sided and voluminous. It included the writing of text-books, and was marked throughout by a deep sense of his mission as a teacher. His lyrical gift is remembered best by such poems as *Hymn to Night*, *A Psalm of Life*, *The Wreck of the Hesperus*, *The Village Blacksmith*, *Excelsior*, *The Belfry of Bruges*, *Resignation*, *The Children*, and *Moriturus Salutamus* (We who are about to die salute you). His skill in narrative verse is seen in *Paul Revere's Ride*, *King Robert of Sicily*, and *The Courtship of Miles Standish*.

Of his longer works the more notable are *Evangeline*: a Tale of Acadie; and *The Song of Hiawatha*, an epic of the red man, which was set to music by Coleridge-Taylor. His dramatic works include *The Spanish Student*. *The Golden Legend* is the best part of the long dramatic poem *Christus*: a Mystery. His translations include a metrical version of Dante's *Divina Commedia*. Always influenced by boyish memories, he is also a poet of the sea.

A scholar, devoted from boyhood to study, his chief characteristic is his simplicity. He is a poet of feeling and sentiment rather than of thought and reason. His phrases are felicitous rather than profound. But he had the gift of imagery, and none has excelled him in narrative power. No poet was ever better beloved by his own people, and his circle of friends was wide and representative. His relations with the young are beautifully commemorated in Whittier's *The Poet and The Children*.

W. F. Aitken

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**Longford.** Co. of Eire, in the prov. of Leinster. Wholly inland, its land area is 403 sq. m. The sur-



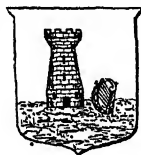
Longfellow. The house in Portland, Maine, where the poet passed his early years

face is level, save in the N.W., but there is much bog land. The chief rivers are the Shannon, on the W. boundary, Inny, and Camlin. Longford has many lakes, including Lough Ree, on the border, and Gowna. The soil is mainly under grass, being used for rearing horses and cattle, but there are dairy farms. Longford is the county town; Granard and Ballymahon are other places. The co. is served by the Eire state rlys., and the Royal Canal. Since 1935 the co. has been united with Athlone for electoral purposes, the combined area returning 3 members to the Dáil. Pop. 37,107.



Longford county arms

**Longford.** Market town and urban dist. of co. Longford, Eire, also the county town. It stands on the Camlin, 76 m. W.N.W. of Dublin, with a station on the Eire state rlys. The chief building is the R.C. cathedral of S. Mel, a fine modern edifice;



Longford arms

others are barracks, a market house, etc. The industries include a trade in agricultural produce, tanneries, and corn mills. Longford is the seat of the bishop of Ardagh. S. Idus founded a monastery here, and in 1400 a Dominican house was established. Longford became a town in the 17th century and sent two members to the Irish parliament. Pop. 4,019.

**Longford.** Village of Wiltshire, England. On the Avon,  $3\frac{1}{2}$  m. S.E. of Salisbury, it contains a castle, seat of the earl of Radnor, built in 1591 and restored in the 19th century. This mansion contains a magnificent collection of pictures.

**Longford, EARL OF.** Irish title borne since 1785 by the family of Pakenham. Thomas Pakenham (1713-76), an Irish M.P., was made a baron in 1756. In 1785 his widow was made a countess and was succeeded in 1794 by her grandson Thomas. He was made a peer of the U.K. as Baron Silchester in 1821, and his titles passed to his descendants. Thomas, the 5th earl, was killed in action at the Dardanelles, 1915. Edward, the 6th earl (b. Dec. 29, 1902), wrote plays produced in Dublin and London. The earl's seat is Pakenham Hall, Westmeath, and his heir is Lord Pakenham (q.v.).

**Longhorn.** Breed of British cattle, distinguished by the great length of the widely branching, drooping horns. Before the development of the shorthorn, this was the principal British breed, but it is now largely supplanted by its more fashionable rival. Its great value is for the production of cheese, as its milk is richer in curd than that of most dairy breeds. Apart from its great horns, it closely resembles the shorthorn in general build and colour, a white line down the back being another distinguishing point. Being of great size and weight, the longhorn yields much beef, and being of hardy constitution it is an easy animal to rear. See Cattle, colour plate.

**Longicorn, OR LONG-HORNED BEETLE.** Name given to a large group of beetles belonging chiefly to the family Ceraurycidae and found wherever trees are abundant. Their antennae are usually much longer than the body, hence the name, and their bodies linear, often brightly coloured. Among them are some of the largest of all insects. The larvae feed by burrowing into the wood of trees, often causing much damage. About 60 kinds occur in Great Britain. Consult Insects of British Woodlands, R. N. Chrystal, 1937.



Longicorn. Specimen of *Leprodora fimbriata*

**Longinus, DIONYSIUS CASSIUS** (d. A.D. 273). Greek rhetorician and philosopher. Born at Athens,



Longford, Wils. The castle, restored in the 19th cent. seat of the Earl of Radnor

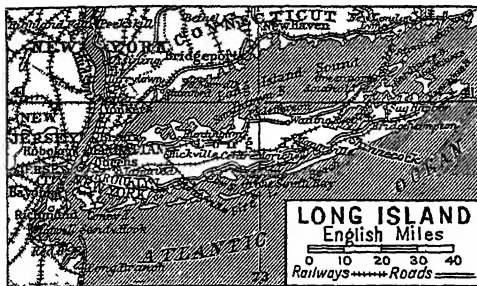
or Emesa in Syria, he became a pupil of Ammonius Saccas (q.v.) at Alexandria. In opposition to Plotinus, he maintained that ideas had a separate existence apart from the divine Nous or intelligence. Visiting the East, he became the intimate friend and adviser of Zenobia, the queen of Palmyra, after whose defeat and

capture he was executed by the emperor Aurelian. A man of immense learning, he was the author of works on various subjects, only fragments of which remain. The famous treatise *On Elevation or Impressiveness of Style*, generally translated incorrectly *On the Sublime*, commonly attributed to him, is probably the work of an unknown writer of the 1st century of the Christian era.

**Long Island.** One of the Bahama Islands, in the N. Atlantic Ocean. It is 70 m. in length and very narrow, scarcely exceeding 3 m. in breadth. It lies between Watling Island and Exuma Island, in about lat.  $41^{\circ} 30' N$ . The chief settlement is Clarence Town. Pop. 4,564.

**Long Island.** A long, narrow island of the U.S.A., forming the S.E. extremity of New York state. Long Island Sound separates it from Conn. It is 118 m. long by 13 m. to 23 m. broad, and covers an area of 1,682 sq. m. Its surface is generally level except for a range of hills along the N. shore, which is indented by several bays, the largest being Smithtown Bay towards the centre. The inner S. shore is marked by Jamaica Bay, near the W. end, and the long, narrow Great South Bay, formed by an outer shore of beach ridges. The E. end of the island comprises two ragged peninsulas.

Long Island is divided into four counties. King's, Queen's, Nassau, and Suffolk, and at its W. extremity is the borough of Brooklyn and Long Island City, separated from Manhattan Island by the East river, only about  $\frac{1}{2}$  m. across. It is largely a residential district for New York business people and is served by the Long Island rly., which carries more season ticket holders than any other U.S. rly. Jones Beach, most frequented of many recreational areas developed in the neighbourhood, has in recent years usurped the popularity of the old time resorts, Coney Island and Rockaway Beach, and Sheepshead Bay is noted for its racecourse. In Queen's are the New York municipal airport, LaGuardia Field, which has the heaviest commercial airline operations in the world; and Flushing Meadow Park, site of the New York World's Fair of 1939 and



Long Island. Map of the island, forming part of New York State, and a residential district of New York City

of early meetings of the United Nations general assembly. Farther out, at Lake Success, the U.N. secretariat was established pending erection of permanent headquarters on Manhattan.

Long Island was first settled in 1623. On Aug. 27, 1776, the British defeated the Americans in the battle fought at the W. end of the island. Pop. 4,600,022.

**Long Island City.** Part of the borough of Queen's, N.Y.C., U.S.A. A separate city until 1893, it stands at the W. end of Long Island, on East River and Long Island Sound, and is the E. terminus of the Long Island rly. An increasingly important commercial and industrial centre, it has a river frontage of 10 m. Within an area of a few sq. m., 1,400 factories are grouped, their products ranging from bread to cut stone and marble. Settled in 1640, the city was created in 1870 by the consolidation of several villages.

**Long Island Sound.** Channel separating Long Island from the N.Y. mainland and Conn., U.S.A. It communicates with the Atlantic through a strait called the Race, and at the W. end is connected with New York Bay by Hell Gate and East River. About 110 m. long, it has an extreme breadth of 24 m. and a greatest depth of 200 ft. Rivers flowing into the Sound from the N. include the Connecticut, Housatonic, and Thames. See Hell Gate.

**Longitude.** The number of degrees from the zero or prime meridian, measured along any parallel of latitude. The prime meridian is by international agreement that of Greenwich, so that places E. of that meridian are in E. longitude and places W. are in W. longitude. E. and W. longitudes meet at the meridian 180°. The rotation of the earth from W. to E. gives to places E. of Greenwich an earlier noon than to places W. Since the earth rotates through 360° in 24 hrs., a

difference of 1° long. corresponds to a difference of 4 mins. of time. See Latitude.

**Longleat.** Seat of the marquess of Bath, 3 m. from Warminster in Wiltshire. The house, on the site of the monastery of S. Radegunde, was built 1567-80 at the cost of Sir John Thynne

and after designs by John of Padua. Later Wren added something to it. Capability Brown remodelled the grounds, and in the 19th century it was "improved" by Sir Jeffry Wyatville. Built in the Italian style, it has a front 220 ft. long, and contains a massive hall and large portrait gallery. It has a collection of portraits by Holbein, Reynolds, Lely, Kneller, Van Dyck, and others. Around it is a park. 15 m. in circumference, through which the Frome flows.



Longleat, Wiltshire. South front of the mansion of the marquess of Bath

The Thynne family, who obtained the property at the dissolution of the monasteries, opened it to visitors in 1949. The name comes from the long leat or conduit that carried water to the monastery.

**Longley, CHARLES THOMAS** (1794-1868). British prelate. Born at Rochester, July 28, 1794, he was educated at Westminster School and Christ Church, Oxford. In 1818 he was ordained, and in 1823 was appointed vicar of Cowley, near Oxford. He remained at



Charles T. Longley, British prelate

Christ Church, being tutor and censor 1825-28, and for a time university reader in Greek. Longley was in 1829 made headmaster of Harrow, which he left in 1836 to become first bishop of Ripon, where he remained twenty years. Then he was translated to Dur-

ham; in 1860 became archbishop of York; and in 1862 archbishop of Canterbury. He presided over the first pan-Anglican conference. He died Oct. 27, 1868.

**Longmaid Process.** In metallurgy, a method of recovering copper and silver from copper-silver ores, devised by William Longmaid, English chemist, in 1848. The ore is first roasted with salt to convert the metals into chlorides, after which the latter are dissolved out by water and weak solutions of hydrochloric acid. From these solutions the copper is precipitated by scrap iron, and the silver by zinc iodide, which is regenerated during the process, and the zinc used again. See Copper; Silver.

**Longmans, Green and Co.** London publishing firm. It was founded 1724 by Thomas Longman, of Bristol. He purchased the business in 1726 at the signs of the Ship and the Black Swan, Paternoster Row, from William Taylor. In 1826 it acquired The Edinburgh Review; in 1882 it started Longman's Magazine, which ran until 1905; and in 1886 it established The English Historical Review. Premises and stock were destroyed in the great German fire-raid of Dec. 29-30, 1940. Until 1947 the firm was housed in a London suburb, but then it returned to Clifford Street, W.1. Southey, Coleridge, Wordsworth, Moore, Macaulay, Scott, Disraeli, Mill, Lecky, Morris, Spencer, Stevenson, Lang, Rider Haggard, Conan Doyle, Winston Churchill, and G. M. Trevelyan are among the prominent names in the Longmans catalogue.

**Long Melford.** A village of Suffolk, England. Situated 3 m. N. of Sudbury, it is a rly. junction for Haverhill and Cambridge. The church contains interesting monuments; the village is known from its association with Isopel Berners. George Borrow's heroine.

**Longmore, SIR ARTHUR MURRAY** (b. 1885). British Air Force

officer. After going through his training in H.M.S. Britannia, Longmore became a naval officer and in 1912 joined the naval wing of the R.F.C. He reverted to sea



Sir Arthur Longmore. British air officer



service in 1916 and was at Jutland, but returned to the R.N.A.S. the same year. In 1929 he was appointed A.O.C., R.A.F. College, Cranwell, and he commanded the coastal area 1934-36. Air chief marshal from Nov., 1939, he became A.O.C.-in-C., Middle East Command, in May, 1940, being succeeded by (Lord) Tedder in July, 1941. Longmore was then inspector-general of the R.A.F., retiring 1942. He was knighted 1935. In 1947 his book, *From Sea to Sky*, was published.

**Longmyndian.** In geology, the name given to a group of Pre-Cambrian sediments which form the Long Mynd near Church Stretton, Shropshire. The strata are subdivided into two groups, E. and W. The former is mainly shales and ashy grits, and rests on the Uriconian Volcanics which form Caer Caradoc, Wrekin. The W. group, largely grits and conglomerates, is considered by many to be much younger. See Pre-Cambrian.

**Long Parliament.** Name given to the English parliament which met on Nov. 3, 1640, sat almost continuously until 1653, and was revived in 1659. It met at a time of great excitement, when the country was thoroughly roused by the king's arbitrary acts. It secured the expulsion of bishops from the house of lords, passed an Act that it should not be dissolved without its own consent, and from 1642 to 1649 conducted the Civil War. In Dec., 1648, some of its members, 143 Presbyterians, were forcibly excluded, but the remainder, called in derision the Rump, continued in session. They set up the court for the trial of the king, abolished the house of lords, and carried on the government until April, 1653, when Cromwell turned them out.

In May, 1659, when there was no settled government in England, the Rump was restored; then the members were expelled, but soon restored again, this time with those kept out in 1653. On March 16, 1660, the parliament passed an Act declaring itself dissolved. From 1640 to 1653 its speaker was William Lenthall, while Pym, Hampden, Cromwell, and Hyde were prominent members of it. This parliament was, strictly speaking, an unconstitutional body after the outbreak of the Civil War, and its Acts from that date have no place on the statute book. See Cromwell.

**Longport.** Type of English porcelain. Earthenware was manufactured at Longport, near Burs-



Longport. Example from the Allen Collection, V. & A. Mus.

lem, Staffs, 1773. In 1793 Davenport produced a porcelain with hard, transparent body. His shapes and decorative treatment were good, and he produced many important royal table services, including the banqueting set for the coronation of William IV.

**Long Primer.** Name of an old printing type size, the modern equivalent of which is 10 point. It is a size larger than bourgeois and a size smaller than small pica, or about  $7\frac{1}{2}$  lines to an inch. Great primer, or 18 point, is three sizes larger. Long primer is known in France as petit-romain; in Germany as Korpus or Garmond, after the French type-founder, Claude Garamond (d. 1561); in Holland as Garmond; in Italy as Garamone; in Spain as Entredós. See Typography.

**Long Range Desert Group.** Reconnaissance and raiding unit organized by Brig. R. A. Bagnold to operate behind the enemy lines during the N. Africa campaigns of the Second Great War. Bagnold had led expeditions to explore the Libyan desert between 1925 and 1932 and written books about desert conditions. He went to the Middle East early in 1940 and, after some opposition, persuaded the War office to let him organize self-contained units to operate in the enemy's rear and gather information. At first a patrol consisted of two officers and thirty other ranks, accommodated in eleven 30-cwt. trucks. Armament comprised eleven Lewis guns, four Boys anti-tank rifles, and one 37-mm. gun, besides the crew's personal weapons. Later a patrol had one officer and 18 other ranks in five trucks, and the armament was altered to Browning, Vickers, and Breda guns.

The trucks were adapted to long desert journeys and equipped with spares and metal strips for negotiating loose sand. Each patrol was completely self-contained and carried sufficient food for an absence from base of three weeks and petrol for 1,100 miles. Further supplies of petrol, food, and ammunition were cached throughout the desert by a servicing unit. The first three patrols were manned by New Zealand divisional cavalry, but as the L.R.D.G. expanded

volunteers were accepted from other British and Imperial units, until 17 patrols were operating.

On Sept. 5, 1940, the first patrol set out, and from then until the fall of Tripoli early in 1943 the group travelled thousands of miles behind the Axis lines, collecting information and harassing lines of communication. Latterly it worked in cooperation with the Free French from Chad territory. *Consult* Born of the Desert, M. James, 1945; Long Range Desert Group, W. B. K. Shaw, 1945.

**Longreach.** Town of Queensland, Australia. It is 428 m. W. of Rockhampton on the Thomson river, which drains into Lake Eyre. Its artesian bore makes it the chief stock-watering centre of the Thomson and Barcoo dists. Pop. 3,683.

**Longridge.** Urban district of Lancashire, England. It stands on the N. bank of the Ribble, about 7 m. N.E. of Preston, with a rly. goods station. S. Lawrence is the parish church. Cotton and rayon manufacture are the chief industries. In the district are large waterworks belonging to Preston. A hill near is known as Longridge Fell. Pop. 4,158.

**Long Service and Good Conduct Medal.** Award to personnel of the British and certain dominion and colonial armed forces, and to a number of civilian services.

ARMY. The Good Conduct Medal was first instituted by William IV in 1830 and granted to soldiers who had served with irreproachable character for 21 years in the infantry or 20 years in the cavalry.

At one time each dominion and colony maintaining armed forces issued its own medal with distinctive ribbon. These were replaced by the present army L.S. and G.C.M. instituted by Edward VII in 1910 and made common to Great Britain and most dominions and colonies. Awarded to warrant officers, n.c.o.s, and men for 18 years' service with good conduct, it has on the obverse an effigy of the reigning sovereign in field marshal's uniform and on the reverse the words "For Long Service and Good Conduct." The medal is worn from a crimson ribbon with white edges. A title on the bar attached to the ribbon mount denotes the



Long Service and Good Conduct Medal. Reverse of army medal

force in which the recipient served. Duty in wartime or in certain overseas garrisons counts double time.

The Indian L.S. and G.C.M. is issued under similar conditions to native troops of the armies of India and Pakistan. It is identical in design, except that the reverse carries a wreath of lotus leaves encircling one of palms. The King's African Rifles L.S. and G.C.M. is the same as the British award, but with the inscription King's African Rifles on the reverse. The Royal West African Frontier Force L.S. and G.C.M. has similarly an appropriate inscription.

**NAVY.** The first L.S. and G.C.M. was instituted in 1831 by William IV; the present medal was authorised in 1848. It is granted to petty officers and men of the R.N. and to n.c.o.s and men of the R.M. who have served 15 years with good character, and carries a gratuity.



Long Service and Good Conduct Medal. Reverse of navy medal

Suspended from a blue ribbon edged with white, it has on the obverse the sovereign's effigy in naval uniform, and on the reverse a ship-of-the-line at anchor surrounded by a cable with the inscription "For Long Service and Good Conduct." Similar medals are awarded by the Australian and Canadian navies. Decorations go to petty officers and men of the Royal Fleet Reserve (ribbon: white, blue, white, the blue and white being separated by a red stripe); Royal Naval Reserve (ribbon: dark green with white edges and a central white stripe); and R.N.V.R. (ribbon: blue, red, green, blue).

**R.A.F.** The medal dates from 1919 and is awarded to n.c.o.s and men with 18 years' exemplary service. It is of silver and bears on the obverse the royal effigy and inscription, and on the reverse an eagle surmounted by a crown surrounded by the words "For Long Service and Good Conduct." The ribbon is dark blue and crimson with white edges.

**CIVIL.** Special constables who have served for nine years in peace or five years in wartime, and have performed 150 police duties, receive the Special Constabulary Long Service Medal. This is of bronze with the royal effigy on the obverse and the name of the recipient on the reverse. The ribbon

is red edged with one black and two white stripes. The London Salvage Corps gives a long service medal on completion of 15 years' unblemished service. The obverse has a kneeling fireman being crowned with laurel by a female figure, and the reverse the name of the recipient. The ribbon is maroon and light blue edged with white. The Colonial Police and Fire Brigades L.S. and G.C.M. was established in 1938, for award after 18 years. Its obverse shows the sovereign's effigy and the reverse a helmet and hatchet (firemen) or a wreathed truncheon (police). The ribbon of the police medal is blue, white, green, white, blue: that for firemen, blue, white, green, white, green, white, blue. The Coast Life Saving Corps L.S. and G.C.M. was instituted by the board of trade in 1911 for 20 years' service with a life-saving rocket crew. Obverse, royal effigy; reverse, recipient's name; ribbon, azure with scarlet edges. *See* Air Efficiency Award; Medals, colour plate: Territorial Efficiency Medal.

**Longships.** Number of rocks off Land's End, Cornwall, England. On one of them—Carn Brae—stands Longships lighthouse, with an occulting light visible for 16 m.

**Long's Peak.** Mt. in the U.S.A. Snow-capped peak in the Rocky Mts. in Colorado, 50 m. N.W. of Denver, it is near the sources of the N. Platte and Colorado (Grand) rivers. Its height is 14,271 ft.

**Longstop Hill.** Name given by British forces to a ridge N.W. of Medjez-el-Bab, Tunisia. It formed the right flank of the Axis troops holding Medjez-el-Bab in 1943, and was captured by the East Surreys and the Argyll and Sutherland Highlanders on April

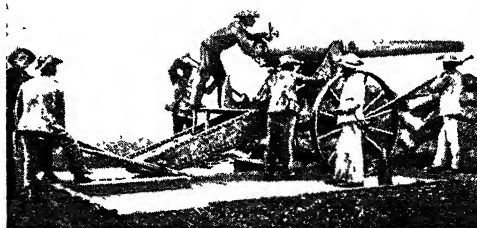
the Mexicans. In 1861 he joined the confederate army, and was soon in command of a corps. He led this in the first and second battles of Bull Run, at Fredericksburg, Gettysburg, and Chickamauga: at the last named his generalship was chiefly responsible for the victory. In 1864 he



Longships, Cornwall. Carn Brae island and the Longships lighthouse, whose beam is visible for 16 miles

was again with Lee in Virginia, and was badly wounded. After the war he adjusted his differences with the northerners, becoming unpopular with the southerners. He held public appointments, among them that of minister to Turkey, and wrote accounts of his campaigns. Longstreet died Jan. 2, 1904.

**Long Tom.** Name given to a type of gun used by the Boers in the S. African War. These guns were 6-in. 94-pdrs., and originally intended for siege work. Adapted for field work, they were used against Ladysmith, Kimberley, and Mafeking. The range was 11,000 yds. *See* Ladysmith.



Long Tom. The Boer gun which bombarded Ladysmith during the siege, 1899-1900

26 after three days' hard fighting. *See* Tunisia, Battle of.

**Longstreet, JAMES (1821-1904).** An American soldier. Born in S. Carolina, Feb. 8, 1821, he was educated for the army at West Point, and first saw service against

ings, all modern, are the town hall and several churches; industries are the mining of coal and ironstone, and brewing and malting. Small until the introduction of the pottery industry in the 18th cent., Longton was made a borough in the

**Longton.** Dist. of the city of Stoke-on-Trent, formerly a separate borough and market town. It has a rly. station. Chief build-

19th. In 1910 it was incorporated in Stoke-on-Trent, its pop. being then 38,000. See Stoke-on-Trent.

**Longtown.** A market town of Cumberland, England. It stands on the Esk, 9 m. N. of Carlisle, with a rly. station. The chief building is the 17th cent. Gothic church, and the chief industry the making of bricks and tiles. Population 6,876.

**Longueville, ANNE GENEVIÈVE, DUCHESSE DE (1619-79).** French princess. Daughter of Henri, duc de Condé, she



Anne Geneviève,  
Duchesse de  
Longueville

was born at Vincennes, where her parents were political prisoners, Aug. 28, 1619. At 23 she married the duc de Longueville, and her beauty, together with

the military prowess of her brother, the great Condé, gained her influence. Her marriage proved a failure, and it was during a liaison with the duc de la Rochefoucauld that she entered politics. She took an active part in the organization of the second Fronde rising in 1653, persuading her brother and Turenne to side with her party. But wearying of her ambitions and jealous of her intimacy with the duke of Nemours, Rochefoucauld cast her off and, after the death of her husband, with whom she had been reconciled, in 1663 the duchess retired to a Carmelite convent. A staunch friend of the Jansenists to the last, she continued to exert her considerable influence at court in their favour. She died April 15, 1679.

**Longview.** City of Washington state, U.S.A., and the co. seat of Cowlitz co. Situated at the confluence of the Cowlitz and Columbia, it was the earliest planned city in the Pacific N.W. and is now one of the world's greatest timber centres. Founded in 1922, Longview also processes, markets, and ships farm products. The Hudson's Bay co. built warehouses here in 1846-47 and in 1852 a convention met at the settlement of Monticello to divide Oregon territory in two. This settlement was washed away by floods in 1866-67. Longview bridge, constructed in 1930 to connect Washington and Oregon across the Columbia, has the largest span of any cantilever bridge in the U.S.A. Pop. 12,385.

Another Longview is a city of Texas, the co. seat of Gregg co.,

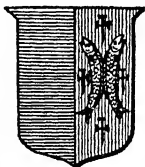
120 m. E. of Dallas. The principal industry is oil refining, through its proximity to the E. Texas oilfield, the world's largest. Population 17,358.

**Longwall Working.** One of the systems of working coal. By it coal is removed from the face continuously, leaving long walls, and the roof over the parts from which the coal has been removed is generally left to settle or fall in, haulage way only being maintained. See Coal; Mining.

**Longwood.**

Name of the residence at St. Helena where Napoleon lived. It obtained its name from the Longwood plains in the N.E. of the island. The house which was built thereon was prepared for Napoleon, and there he lived from soon after his arrival on the island in Oct., 1815 until his death, May 5, 1821. See Napoleon.

**Longwy.** Town of France. In the dept. of Meurthe-et-Moselle, it is 40 m. N.N.W. of Metz, on the

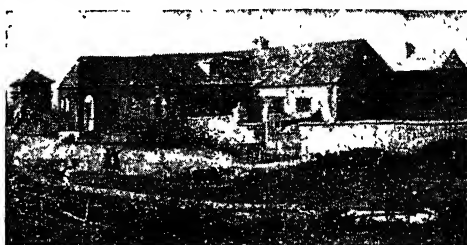


Longwy arms

Belgian frontier, and consists of an upper town on a steep rock, and a lower. In the latter various manufactures are carried on, and there are blast furnaces in the vicinity. Called by Louis XIV the iron gate of France, it commands the approach of the Chiers valley from Luxemburg. It stands on one of the routes which invaders from the N.E. have always taken, following the course of the Moselle trench to Luxemburg and thence into France. It is on a strategic rly., which the Germans seized at the outbreak of the First Great War, and possessed a fort, one of a chain of forts designed for the protection of the N.E. frontier of France.

In 1914 Longwy was garrisoned by two French battalions and a small force of artillery. The Germans attacked the town on Aug. 21, when the crown prince with the 5th army began his advance and opened the bombardment with heavy artillery. By Aug. 26 the Germans had put 36 out of 37 guns in the defences out of action, and the commander surrendered. Pop. 12,150.

**Longyearbyen.** Coal mining settlement on Spitsbergen (q.v.). The coal deposits were first developed under licence from the Norwegian govt. in 1909 by an American, John Longyear, after whom the settlement was named. A yearly average of 300,000 tons of coal is produced. The pop. of 600 consists almost entirely of miners and auxiliary workers, most of whom migrate regularly from Norway for the season. A governor has administrative and



Longwood, St. Helena. The house where Napoleon passed the last years of his life during exile on the island

From a print c. 1840

legal authority. The original settlement was destroyed by the Germans in the Second Great War, but was rebuilt and resumed coal exports in 1946.

**Lonsdale, EARL OF.** A British title borne with a short interval since 1784 by the Lowthers. The family dates back to the time of Edward I or earlier, and in Tudor times the Lowthers were important in Cumberland. In 1696 Sir John Lowther was made a viscount. He was a supporter of the Revolution of 1688, after which he was first lord of the treasury. The title became extinct when his younger son died in 1751.

The existing branch of the Lowthers is descended from Sir Christopher (d. 1617). Sir James (1736-1802) inherited the great wealth of Viscount Lonsdale and of other Lowthers, including another Sir James, enriched by the development of Whitehaven. He was made an earl in 1784, but the earldom died with him. A kinsman, Sir William, became Viscount Lowther, and was made earl of Lonsdale in 1807. He built Lowther Castle, Penrith, the chief seat of the family.

In 1882 the title passed to Hugh Cecil Lowther, 5th earl (1857-1944). He was



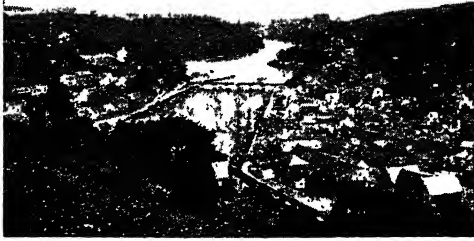
5th Earl of Lonsdale,  
British sportsman  
Russell



born on January 25, 1857, was educated at Eton, and became devoted to sport and adventure. In 1878 he led an expedition to the Arctic and discovered gold in Klondike before the boom. He rode in steeplechases, was master of famous packs, won the St. Leger with Royal Lancer in 1922, and was a picturesque figure on the racecourse. In 1923 his Latto took the Waterloo Cup. President of the National Sporting Club, in 1911 he awarded gold belts for boxing at five weights. Dying childless on April 13, 1944, he was succeeded in the title by his brother Lancelot (b. June 25, 1867). See Boxing.

**Lonsdale, Frederick** (b. 1881). A British playwright. Frederick Leonard, a native of Jersey, was born on Feb. 5, 1881. He established his reputation as the librettist of musical comedies and operettas, e.g. *The King of Cadonia*, 1908; *The Balkan Princess*; *The Maid of the Mountains* (q.v.). This was eclipsed by his fame as the author of sophisticated, witty comedies of social life, adroitly characterised and deftly put together. These included *Aren't We All?* 1923; *Spring Cleaning*, 1923; *The Last of Mrs. Cheyney*, 1925; *On Approval*, 1927; *Canaries Sometimes Sing*, 1929. But for the *Grace of God*, 1947, struck a more serious note.

**Lons-le-Saunier.** A town of France, capital of the dept. of Jura. It lies on the river Vallière, 56 m. by rly. S.W. of Besançon, and is a rly. junction of note. There is trade in mineral waters, wine, timber, and agricultural produce, and the town's salt baths are resorted to for rickets and other ailments. The principal buildings are the prefecture, formerly a convent, the hôtel de ville, with a small museum, and



Looe, Cornwall. Town and harbour, with the bridge connecting E. and W. Looe, looking inland Frith

the 12th-15th cent. church of S. Désiré. The town was the birthplace of Rouget de Lisle (q.v.). Pop. 15,568.

**Looe.** A card game. Three-card loo may be played by several persons, 5 or 7 making the best game. He who cuts lowest deals, giving three cards, one at a time, to each player. An extra hand, termed a miss, is also dealt, which the eldest player may exchange for his own, but if he looks at the miss he must take it or be loosed. So long as the miss remains on the table any player may take it in his turn. Each dealer puts a certain stake into the pool, which is also increased by penalties. The card left at the top of the pack is turned for trumps, but when the pool contains only the minimum amount the round is usually played without trumps. The knave of clubs, known as Pam, is the principal card.

The first player looks at his cards and decides to play his own hand, take the miss, or drop out; the next player doing in like manner; and this continues till it is seen how many players stand the pool. The eldest hand then leads a card, and the next player must, if possible, either head the trick by a higher card or trump it. Each player's card is left in front of him as played; the winners taking a third of the pool for each trick and those players who have not won a trick are loosed, by having to pay a certain stake into the next pool, making it, with the dealer's contribution, a double.

**Looe.** Seaport, holiday resort, and urban dist. of Cornwall, England. It stands on Looe Bay, 16 m. W. of Plymouth, terminus of a branch rly. from Liskeard. The

urban dist. includes East Looe and West Looe, which are connected by a long bridge across the river Looe. The main buildings are the parish church of S. Martin, which has a Norman doorway, the restored chapel of S. Nicholas, and the old town hall. Industries are shipping, fishing, and fish canning. The two Looes are ancient places, and were at one time flourishing seaports; the tidal harbour is still used by the small fishing fleet. Privileges were granted to them in the 14th century, and in 1558 E. Looe became a corporate town. W. Looe obtained a like distinction later, and then the two began to send members to parliament. In 1832 the right to separate representation was taken away, and later the privileges of both boroughs were lost. Off the mouth of the river is Looe Island, once a haunt of smugglers. Market day, Sat. Pop. 3,800.

**Loofah** (*Luffa cylindrica*). A climbing herb of the family Cucurbitaceae. A native of Africa, it has long stems that climb by means of tendrils. The alternate leaves are large, rough, five-lobed. The flowers are white, the females distinct from the males. The fruit is long, like a cucumber, but stouter. The flesh is permeated by a network of tough fibres, and when the flesh is macerated this is left intact and forms the bath loofah.

**Looking Backward, 2000-1887.** Utopian romance by Edward Bellamy (q.v.), first pub. 1888. The hero, put

into a mesmeric sleep in 1887, wakes up over a century later to find the world reorganized on a socialist basis with the aid of all kinds of mechanical invention. Among other happy prophetic strokes, Bellamy depicted the flooding of a private house with music or the performance of a concert, drama, or oration, all at the turn of a switch.

**Lookout.** Mountain ridge in the U.S.A. It extends from the N.W. corner of Georgia to the Tennessee river, and thence S.W. into Alabama, and is noted for the grandeur of its scenery. It reaches 2,125 ft., and is traversed by a rly. See Chattanooga.

**Loom.** Apparatus for weaving cloth. Some looms are operated by hand, some by power. The hand loom has now only a limited



Frederick Lonsdale, British playwright



Lons-le-Saunier arms



Loofah. Leaf, flower, and fruit

application in village industry and handicraft work; its development is dealt with under Weaving. The power loom on which most of the woven fabric of the civilized world is made is a complicated machine. Looms are specially designed to do certain work; thus a loom built to make cotton sheeting would not be suitable for crêpe-de-chine, still less for velvet or towelling.

The basic parts of the power loom are, as for the hand loom, the beam on which the warp is wound, and from which it passes to the shafts, frames set with wire healds each with a central eye, so that by raising a shaft all warp threads passing through heald eyes on that shaft are raised simultaneously; the shuttle, carrying a bobbin of weft backwards and forwards across the warp; the sley, an oscillating frame carrying a comb-like wire reed for pressing the weft threads up against their predecessors; and the take-up roller, on which woven cloth is wound.

The cycle of operations for a simple weave is as follows:—the shafts lift all odd threads and leave all even threads lying on the shuttle-race; the shuttle is given a violent jerk by a flexible wooden rod with a rawhide thong attached to the end; the sley moves backwards and presses the newly-inserted weft in place; then moves forwards, and at the same time the shafts controlling the odd

threads lower them to the race, and those controlling the even threads lift these; the weft shuttle is returned, and the second pick of weft "beaten up" against the first. At the same time, the take-up roller moves the cloth on the distance of one pick, and a similar length of warp is released from the beam at the back.

Looms can be divided into three types, depending on the means used for raising and lowering the shafts. The Tappet is light and fast, but can be used only for comparatively simple weaves. The Dobby will accommodate up to 48 shafts, and on it elaborate weaves such as herringbones can be woven. Mechanism controlling the lifting of the shafts is contained in a box. The Jacquard has no shafts, but each warp thread passes through a separate heald hung on a cord, and can be lifted independently. The lifting is controlled by a series of feeler wires working in conjunction with holes punched in cards, rather like player-piano rolls; Jacquards are slow and tedious to set up, but are used for elaborate work such as damask.

In the ordinary loom the operator has to watch for shuttles running empty and to replace them. In the automatic loom a feeler mechanism brings a shuttle-change into operation when a shuttle is nearly empty, the old one being pushed aside and a full one put in its place. The operator's

only duties are to see that there is a reserve of full shuttles, and to repair breaks when there is a stoppage. One man can look after eight or more machines.

Special looms are required for chenilles; pile fabrics such as velvets; carpets; and towelling. In most of these, a second and independent weft or warp forms a series of raised loops over wires; in towellings these loops are left intact, but in velvets and carpets the wires are forged into knife-edges at the end, and as they are withdrawn by the loom mechanism

they cut the loops, leaving the pile. More cumbersome looms are used for weaving asbestos belting, brake linings, etc.

Ribbons, tapes, and webbings are woven on smallware looms, usually large structures really consisting of about a dozen looms side-by-side. The shuttle is not thrown backwards and forwards, but is positively moved by rack and pinion; this is possible because for a tape an inch wide the shuttle can be 10 ins. in length, whereas for a 100-inch calico the shuttle would have to be about 9 ft. long for a positive drive. A newer smallware loom is the Unit type: its shuttle works in a semi-circular track, while the shafts and sley are replaced by two fittings like metal combs with teeth facing and capable of overlapping.

Modern developments include circular looms, which insert the weft in a continuous spiral, and so form a tubular fabric; and shuttleless looms, with nippers to pull the weft across the cloth from a large bobbin. These machines do not at present constitute any serious threat to the orthodox type. *Consult Automatic Weaving, W. A. Hanton, 1929.*

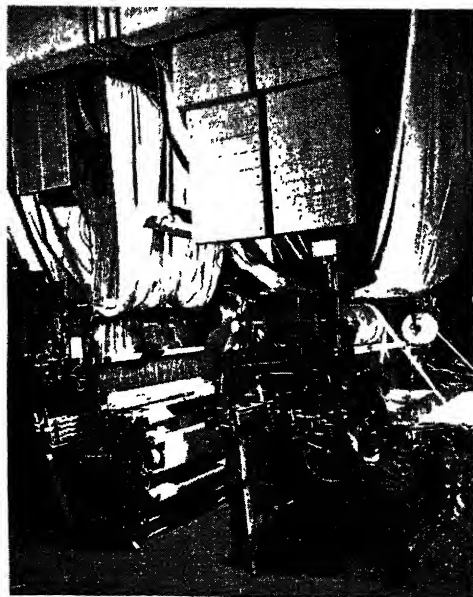
F. V. Davies, A.R.I.C.

**Looming.** Nautical expression for an enlarged, and often indistinct, appearance of an object. This magnifying process frequently occurs with slight fog over the sea or near the coast, and is due to the refraction of light in the surface layers of the atmosphere. *See Mirage.*

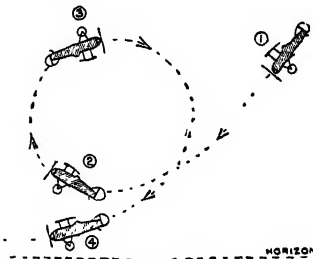
**Loon** (also loom, from old Norse *lōmr*). Name applied popularly in Scotland to the great northern diver (*q.v.*). In N. America the name is given to several similar diving birds of the genus *Gavia*.

**Loon.** Town and harbour of Bohol, Philippine Islands. It lies on the W. declivity of a hill in which steps have been cut to enable the town to be approached. The harbour is protected by a mole 109 yds. in length. Loon trades in local produce, chiefly cocoa, coffee, maize, tobacco, and coconuts. *Pron. Lo-on.*

**Looping the Loop.** Aerobatic manoeuvre, involving a complete revolution in flight in a vertical plane. In the normal loop, the upper surface of the aircraft is on the inside of the circle; the opposite is true of the inverted or outside loop. The term is derived from a fun-fair "thrill" popular in the early 20th cent., a development of the switchback railway in which the passengers'



Loom. Jacquard loom, a large machine used for weaving elaborate fabrics such as damask



Looping the Loop. Diagram showing successive positions of an aeroplane during a loop

car followed the rails through a complete loop.

**Loos.** Mining village of France, in the dept. of Pas-de-Calais, 3 m. N.W. of Lens. As the result of the fighting around it in the First Great War the original houses were obliterated, but a new village was built, with a memorial to over 20,000 missing British soldiers. It is sometimes known as Loos-en-Gohelle, to distinguish it from Loos, a small town to the E. of Lille.

The village is famous for the battle of Loos, an engagement of the First Great War. This was one of the earliest large-scale Allied offensives against German forces on the western front, Sept.-Oct., 1915. The attack was timed to coincide with a French offensive in Champagne, and its object was to recover from German hands the mining district and the town of Lens, and possibly Lille if the initial attack were successful. The battle was notable as being the first time the British new armies, raised in 1914, were employed in offensive warfare, and the first occasion on which gas was used against the Germans. As it happened, the latter proved a handicap to the British, as the wind shifted just as the gas was released from the cylinders.

The German positions, which included the so-called Hohenzollern Redoubt, Hill 70, and Fosse 8, were of great strength; and the battle was preceded by heavy artillery bombardment of these positions, lasting four days. The attack began in the early hours of Sept. 25, on a front of over 20 m. Troops taking part were the British 1st, 2nd, 7th, 8th, 9th, 15th, and 47th divisions, and the Indian corps, with the 21st and 24th divs. in reserve; and to the immediate S., two French corps and two French divisions. The German positions were deeply penetrated in some places, but wire and machine guns had soon checked the attack elsewhere.

The 15th and 47th divs. both entered Loos, the former forcing a way right through the village. By noon the situation was that British reserves might have clinched a signal victory; but the reserves were too far from the front, which they could not reach before night-fall, by which time the Germans had counter-attacked strongly. The French, attacking at midday, had gained some ground. Heavy fighting raged for the next two days. New attacks by the British 21st and 24th divs. met with no



Loos. Plan of the battlefield showing relative positions of Allied divisions

success in the face of machine-guns and gas shells. There were many German counter-attacks, but by Sept. 28 the battle had come almost to a standstill. While the French took over the Loos sector, at Sir J. French's request, and the Allies were consolidating their new front, the Germans made several local attempts to recover ground, notably at the Hohenzollern Redoubt, which the British 9th div. had stormed the first day. There was severe fighting for the Redoubt between Sept. 29 and Oct. 8, and part of its tangle of trenches was re-occupied by the Germans

The net result of the battle was the Allied gain of a salient towards Lens with a depth, at its deepest point, of about 3,500 yards, together with the village of Loos and Souchez and the W. slopes of Vimy Ridge. The British force engaged had been about 250,000, the French almost as large. British losses, 47,000 during the first three days, probably finally exceeded 60,000. Individual battalions suffered grievously, e.g. of the 9th King's Liverpool only 5 officers and 120 men were left. German casualties were smaller than those of the Allies. The attempt to pierce the German front where it was strongest might have succeeded had the Germans been surprised and had ample Allied reserves been available. Neither of these conditions being fulfilled, the struggle, after the initial success, resolved itself into a series of ill-supported and ill-concerted attacks on German machine-gun positions under heavy fire. The heroism of the troops on both sides was remarkable. Few battles have ever been more desperately contested. Apart from the official war histories, vivid descriptions of the battle are to be found in *The First Hundred Thousand*, Ian Hay, 1915; *Realities of War*, Sir P. Gibbs, 1920; *Peter Jackson*, Cigar Merchant, G. Frankau, 1920; *The Great Push*, P. McGill, 1916.

**Loosestrife.** Folk-name applied to several plants, but especially to *Lysimachia* (common loosestrife) and *Lythrum salicaria* (purple loosestrife), both tall herbs found on river banks. Common loosestrife (*Lysimachia vulgaris*) is a herb of the family Primulaceae. It has lance-shaped leaves, and yellow flowers in clusters at the top of the stem. Purple loosestrife, family *Lythraceae*, has narrow leaves and purple or pink flowers, forming handsome spikes. It is often mistaken for willow herb (*g.v.*).



Loosestrife. Flower spray of purple loosestrife

**Lope de Rueda** (c. 1510-65). Spanish dramatist. Born in Seville, and a gold-beater by trade, he became a pioneer of the popular Spanish drama, writing prose plays which Cervantes, who calls him "the great Lope de Rueda," witnessed in his youth. The ablest member and manager of a small company of players, he displayed much ability in the representation of roguish servants, Biscayan boors, etc., travelling from town to town with crude properties and costumes, and performing in a wagon. More popular were his short pastoral dialogues and interludes, interspersed with songs. His plays were usually drawn from Italian sources. He was buried in Córdova cathedral.

**Lope de Vega** (1562-1635). Spanish dramatist and poet, whose full name was Lope Felix de Vega



Lope de Vega,  
Spanish dramatist

Carpio. He was born in Madrid, Nov. 25, 1562, and educated at the imperial college and the university of Alcalá. As a soldier, he took part in the Armada expedition against England, and he belonged to the same regiment as Cervantes. He eloped with and married a lady of the court, but after killing an opponent in a duel he spent some years in banishment from Madrid. After the death of his second wife, in 1614 he took holy orders, became a member of the order of S. Francis, and was a familiar of the Inquisition. He amassed honours and wealth, enjoyed universal popularity, and dying in Madrid, Aug. 27, 1635, was buried in the convent of Jesus and Mary.

Called *El Fenix de España*, the Spanish phoenix, he wrote nearly 2,000 plays, religious dramas, and interludes, of which 430 plays and 50 autos, or religious dramas, are extant. The chief founder of the national drama of Spain, he introduced the drama of intrigue, familiarly known as that of the cloak and sword. His best known plays include *La Carbonera*, *Bella Aurora*, *Noche de San Juan*, and *Por el Puente Juana*. While in contemporary England women's parts were being taken by boys, Lope assigned them to women. Despite the vastness and variety of his output—probably no more prolific writer has ever lived—he wrote spirited dialogue, displayed infinite invention, and had a won-

derful gift for drawing pictures of manners from real life.

His other works embrace epics, poems, and prose romances. He wrote a long continuation of Ariosto's *Orlando Furioso*—*Hermosura de Angélica*, 1602; *La Dragontea*, 1598, an epic attacking Drake and Queen Elizabeth; in rivalry with Tasso, a poem of 20 cantos entitled *La Jerusalén Conquistada*, published 1603; a religious poem, *San Isidro*, 1599, on the patron saint of Madrid; *La Corona Trágica*, 1627, an epic on Mary Queen of Scots; *Arcadia*, 1598, a pastoral romance in prose and verse; a long novel, *El Peregrino en su Patria*, 1604; and a religious pastoral, *Pastores de Belén*. He also composed sonnets of merit. See *Drama*; *Spain*; *Literature*.

*Bibliography.* Works: Edition in 21 vols., 1876-79; definitive edition, 1890-1920; *Some Account of his Life and Writings*, Lord Holland, 1817; *L. de V. and the Spanish Drama*, J. Fitzmaurice-Kelly, 1902; *Life*, 1904, and *The Spanish Stage in the Time of L. de V.*, 1909, H. A. Rennert.

**Lopes, Sir Manasseh Masseh** (1755-1831). British politician. Of Spanish-Jewish descent, he was born in Jamaica, Jan. 27, 1755. Becoming a Christian, he was elected M.P. for New Romney in 1802, and was created a baronet three years later. In 1819 he was tried for corruption, and it was found that he had bribed the electors of Barnstaple with £3,000 and those of Grampound with £2,000 for seats in those constituencies. Fined £1,000 and sentenced to two years' imprisonment for the latter offence, upon his release he was elected for his pocket borough of Westbury. He died March 26, 1831, leaving a large fortune.

**Lopez, Carlos Antonio** (1790-1862). Dictator of Paraguay. Born at Asunción, Nov. 4, 1790, his early knowledge and grasp of public affairs aroused the hostility of his uncle, J. G. R. Francia, then dictator of Paraguay, and he was forced into obscurity until Francia's death in 1840. By 1844 he had become president, governing nominally under a republic constitution, but actually as an autocrat. His rule was sagacious, and was chiefly directed to developing the resources, both material and military, of the country.

His son, Francisco Salano Lopez, born at Asunción, July 24, 1826, was educated in Paris, and in 1845 was appointed commander-in-chief of the Paraguayan army. In 1854 he

was sent on a diplomatic mission to Europe and on his return was made minister of war. President from



F. S. Lopez,  
dictator of Paraguay

the death of his father, he was almost constantly at war with Brazil, Argentina, and Uruguay. His cruelty in the wholesale execution of leading men suspected of disloyalty to him alienated many supporters. Driven to the N. of Paraguay by the victorious Brazilians, he was overtaken near the river Aquidaban and killed, March 1, 1870. A study by R. B. Cunningham Graham appeared in 1933. *Pron.* Lo-payth.

**Lopez, Vicente Fidel** (1814-1903). Argentine author. The son of Vicente Lopez (1784-1856), one of the founders of the republic, he was born in Buenos Aires and became a lawyer. Fearing the dictator Rosas, he fled to Chile, and at Valparaiso founded in 1842 one of the first reviews published in that country. He returned to Argentina in 1852 to become head of the university at Buenos Aires. Among his writings, all in Spanish, are *The Bride of the Heretic*, or *The Inquisition of Lima*; *The Races of Peru before the Conquest*; *History of the Argentine Republic*.

**Lop-nor** or **LoB-nor**. Lake-system of China, in Sinkiang prov. Situated between the Kuruk and Altyn ranges, it collects the drainage of the Tarim basin. Described in early Chinese annals and visited by Marco Polo about 1273, its former sites are now desiccated, salt-encrusted desert. Since the 17th century the Tarim has discharged more southerly and westerly into the reed-grown Karakoshun lagoon, visited from 1876 onwards by Prjevalsky and Stein.

**Lopokova, Lydia** (b. 1892). The former name of Lady Keynes, Russian-born dancer. Born in Russia, Oct. 21, 1892, she studied at the imperial ballet school, St. Petersburg, and performed at the Marinsky Theatre in *The Sleeping Princess*, 1901. She became a famous dancer in Paris and New York before making her London début in 1918 with Diaghilev's company, of which she was for a time prima ballerina. Outstanding in grace and technique, she created the characters of Columbine in *Carnaval*, and the can-can dancer in *La Boutique Fantasque*, and her brilliant sense of comedy was



Lydia Lopokova, Russian dancer, in *The Good-Humoured Ladies*

probably at its best in *The Good-Humoured Ladies*. As an actress she gave notable performances in Shakespeare, Molière, and Ibsen. She married J. M. (Lord) Keynes (*q.v.*) in 1925.

**Lopolith** (Gr. *lopos*, basin). In geology, a large basin-shaped intrusion of igneous rock. The mass may originally have been a thick sill which, as the magma reservoir below emptied, sagged centrally, thus taking the present shape. Important lopoliths include the Bushveld area of Africa, and the Sudbury norite in Canada; with the latter are associated world-famous nickel deposits.

**Lopping.** Term in England for the ancient right of cutting forest trees for firewood. While woodland was subject to rights of common of pasture, the lopping right was often vested in the lord of the manor. In Essex, by a right known as "the common of estovers," residents of the villages of Epping Forest had the privilege of cutting wood within reach of the axe every year between Nov. 11 and April 23, by virtue of a grant from Queen Elizabeth as lady of the manor of Loughton (*q.v.*). By the 1860s the right was confined to Loughton and Theydon Bois. When the forest was secured for the public the loppers were compensated partly by a grant, partly by the formation of a lopping endowment charity, and by the building at Loughton in 1883 of the public Lopping Hall. The pollarded condition of the vegetation in the forest is due to the custom. Consult London's Forest, P. J. S. Percival, 1909.

**Loquat** (*Eriobotrya japonica*). Japan quince or medlar. An evergreen shrub or small tree of the family Rosaceae, it is a native of Japan and S. China. Its large, oblong, and wrinkled leaves are downy on the underside. The white flowers are in drooping sprays, and the orange-red, downy fruit hangs in clusters. Its flavour is much like that of a sharp apple, but the fruit is not edible until about May.

**Lorain.** City of Ohio, U.S.A., in Lorain co. At the mouth of the Black river, on Lake Erie, 25 m. W. of Cleveland, it is served by the Baltimore and Ohio and other rlys., and by lake steamers. It has a good harbour, from which a shipping trade in coal, iron, lumber, etc., is carried on. The steel industry on which the city's economy is based became important in 1894 when Tom Johnson brought his works here. Incorporated in 1836 as Charleston, Lorain received its present name in 1874, and became a city in 1896. Pop. 44,125.

**Lorraine, ROBERT** (1876-1935). British actor and airman. Born at New Brighton, Jan. 14, 1876, he went on the stage at 13, and soon played small parts for George Alexander at the St. James's Theatre, London. His John Tanner in *Man and Superman* (*q.v.*),



Robert Lorraine, British actor and airman

New York, 1905, and his Bluntschli in *Arms and the Man*, 1908, proved him a foremost Shavian actor. Other parts included Charles Surface in *The School for Scandal*; the lead in *Cyrano de Bergerac*; Rasendyl in *The Prisoner of Zenda*; Mirabel in *The Way of the World*; Simon and his son in *Mary Rose*. Lorraine was the first to cross the Irish Sea in an aeroplane, 1910, and served with distinction in the R.A.F. during the First Great War. He died Dec. 23, 1935.

**Loranthaceae.** A family of evergreen shrubs, parasitic upon trees, and natives of the tropical and temperate regions. The usually opposite leaves are leathery, yellowish green or olive brown. In some species the sexes are combined in one flower, in others they are separate. They have no petals, and are succeeded by berries, each containing a single seed. Not all the species are out-and-out para-

sites. Those, like the European mistletoe, that have green leaves, merely absorb water and salts from the sapwood of the tree and elaborate these materials (with



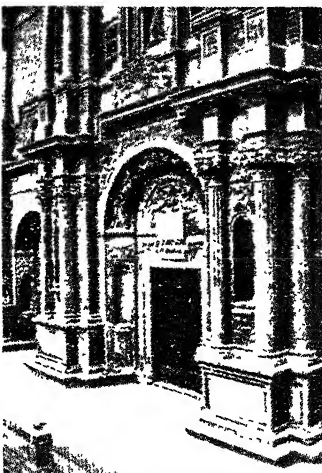
Loquat. Foliage and flower sprays of the Japan quince; inset, flower

carbon from the atmosphere) into food. Some species of *Loranthus* are almost leafless.

**Lorca.** Town of Spain, in the prov. of Murcia. It stands on the river Sangonera, 41 m. by rly. S.W. of Murcia. Crowned by a Moorish castle, the old section of the city is crowded on the slope of a hill; the modern part, with broad streets, fine squares, law, courts, town hall, hospitals, theatre, etc., lies on the plain. Lorca cathedral is a Gothic structure, dating from the 12th cent. Gunpowder, chemicals, porcelain, woollens, and leather are manufactured; there is a trade in wine, agricul-



Lorca arms



Lorca, Spain. Façade of the church of S. Patricio

tural produce, and cattle. In the vicinity are silver and lead mines. Lorca figured prominently in the wars of the Moors. In 1802 thousands perished through the bursting of its huge irrigation reservoir. Pop. 70,139.

**Lorca, FEDERICO GARCÍA** (c. 1898–1936). A Spanish poet and dramatist. The date of his birth is unknown.

He was born in Fuentevaqueros, Granada, and in youth was a friend of De Falla (*q.v.*), with whom he shared a love of Andalusian folk music and dancing. During 1919–28 he lived in Madrid and Granada, and in 1930 went to New York. He was assassinated by fascists in Granada at the outbreak of the Spanish Civil War.

A truly popular modern poet, Lorca had an important influence on his contemporaries, for the emotional forces he released became part of the revolutionary movement. It was said that "he summoned the traditions, tragedy, and suffering of his own life to face, fight, and overcome death." His first collection of poems was published in 1921, and his best-known lyrical work, *Romancero Gitano*, in 1928. Poems inspired by his unhappy New York experiences, *El Poeta en Nueva York*, appeared posthumously. Among his plays were *Mariana Pineda*, 1927; two great tragedies, *Bodas de Sangre*, 1933, and *Yerma*, 1934; *Doña Rosita la Soltera*, 1935. *Bodas de Sangre* was translated into French as *La Maison de Bernarda* by J. M. Créach, and into English as *Blood Wedding* by Roy Campbell. A selection of Lorca's poems was translated by S. Spender and J. L. Gili, in 1939. *Consult Life*, A. Barea, 1944.

**Lord** (A.S. *hláford*, from *hláf*, loaf, bread; and probably *weard*, warden, keeper). Originally meaning master of a household, hence generally master, ruler, nobleman, or man of high official rank; title applied specially in Great Britain to peers and various dignitaries. The general sense occurs in land-lord, lord of the manor, and the Scottish laird.

As applied to God the word is used to render the Hebrew *Yahveh* (Jehovah) and *Adonai*, Gr. *Kyrios*, and Lat. *Dominus*. As a special

title the word lord is never given to other than British persons. It is applied to peers of the realm (lords temporal and spiritual), and may be substituted for the legal or courtesy titles marquess, earl, viscount, or baron, the following "of" being omitted, but is never given as a title to a prince or a duke. Lord is nearly always substituted for baron. By courtesy it is prefixed to the first name and surname of younger sons of dukes and marquesses. Every bishop of the Church of England, diocesan or suffragan, and every Welsh bishop consecrated before the disestablishment, is styled the lord bishop, unless retired. *See* Address, Forms of.

**Lord Advocate, or KING'S ADVOCATE.** Principal law officer of the crown in Scotland. As head of the administration of criminal justice, he acts as public prosecutor, and pleads in all causes that concern the crown. Almost invariably an M.P. before the creation of a secretary of state for Scotland he was responsible for all parliamentary business relating to that country. The office of lord advocate was established early in the 16th century. His salary since 1894 has been £5,000 a year.

**Lord Chamberlain.** Chief officer of the British royal household, and the second dignity of the court. The symbols of his office are a white staff and a key. He is in charge of all the household above stairs, and appoints the royal physicians and tradesmen. All state ceremonies are in his care. He is a peer, a privy councillor, and a member of the ministry. With some exceptions he licenses the London and metropolitan theatres, and those at Windsor and Brighton, and at other places when visited by the sovereign. In 1624 the lord chamberlain replaced the master of the revels as licenser of plays, and now all plays given in Great Britain must be licensed by him under the Theatres Act of 1843. A queen-consort has a separate lord chamberlain's department. *See* Censorship; Chamberlain; Royal Household.

**Lord Chief Justice.** Name given to the judge who in England presides over the king's bench division of the high court of justice. He ranks next to the lord chancellor, the president of the chancery division. There was a justiciar in England very early, and in the time of Henry II a lord chief justiciar or justice. At first the highest officer of state, a kind of prime minister, he was after a time confined to his legal duties, and became president of the court of king's bench. Until 1873 there was also a chief justice of the court of common pleas. In the U.S.A. the chief justice is the president of the supreme court. *See* King's Bench.

**Lord Great Chamberlain.**

The sixth great officer of state in England. As the name chamberlain suggests, he was originally in personal attendance on the king, but many of his duties have now lapsed. He still has charge of the palace of Westminster and of the arrangements when the sovereign opens parliament and is in evidence at a coronation, when he claims as part of his perquisites the bed in which the king slept the night before the ceremony. In 1133 the hereditary office was granted to Aubrey de Vere: the sole hereditary holder in 1948 was the 2nd earl of Ancaster. *See* Chamberlain.

**Lord High Chancellor.** Highest judicial functionary of Great Britain. He is a cabinet minister, a privy councillor, and relinquishes office on a change of government. The lord high chancellor, keeper of the great seal, and as such keeper of the king's conscience, may not be a Roman Catholic. He issues the royal commissions for the opening and proroguing of parliament, and for giving assents to bills, and reads the king's speech when the sovereign is not present.

The chancellor appoints all justices of the peace, some of the high court, and all county court judges, makes rules for carrying out the Summary Jurisdiction Acts, and issues all writs. He is president or speaker of the house of lords, his seat being known as the woolsack, and *ex officio* its president when it is the supreme court of appeal. He takes precedence immediately after the archbishop of Canterbury, receives a salary of £10,000 per annum, and is entitled to a pension of half that amount on relinquishing office. As ex-chancellor he is *ex officio* a judge of the house of lords. There was a lord high chancellor



Federico Lorca,  
Spanish poet



Lord Chamberlain  
in court uniform



for Scotland until 1707. *See* Chancellor; Chancery; Lords, House of; Woolsack.

**Lord High Commissioner.** Representative of the sovereign at the general assembly of the Church of Scotland. His presence gives the sanction of the civil authorities to the assembly's deliberations. The office is normally filled by a Scottish peer. *See* Scotland, Church of.

**Lord High Steward.** First great officer of state in England. He waited at the royal table on certain feast days, then only at coronations, and later presided at the trials of peers. The last permanent steward was Thomas, duke of Clarence, d. 1421. The office is now revived only for a coronation or the trial of a peer.

**Lord Howe.** Island in the S. Pacific belonging to New South Wales. It is 300 m. N.E. of Sydney. Mountainous and precipitous, its highest point reaches 2,840 ft., and it covers 5 sq. m. Lord Howe is also the name of a group in the Solomon Is.

**Lord in Waiting.** Personal attendant on the British sovereign. He is invariably a peer belonging to the political party in power, and as such leaves office on a change of government. Usually seven in number, these lords attend on the sovereign in turn. A queen-consort has sometimes a lord in waiting, not a political office. *See* Royal Household.

**Lord Keeper.** In England, until about 1760, one of the great officers of state. He was the keeper of the great seal, originally only as a deputy of the lord chancellor during the absence of the latter abroad, or pending the appointment of a lord chancellor, but in course of time his office was made permanent, and included the work of affixing the seal to documents.

**Lord-Lieutenant.** Official representing the sovereign. There is one for every county in the U.K., usually a nobleman with estates therein. The lord-lieutenant is appointed by the sovereign by patent under the great seal. His original duty was to raise a defence force under a commission of array on the occasion of disorders, and this survives in his office as president of the county T.A. association. He is usually *custos rotulorum*, or keeper of the records, for the county, and recommends the names of persons for appointment as magistrates. Before the creation of the Irish Free State in 1922 there was a lord-lieutenant of Ireland. *See* County.

**Lord Mayor.** Title of the chief magistrate of the City of London and of other English cities. It is



Lord Mayor of London in his robes

commonly assumed to have been first bestowed upon the mayor of London in 1354 by Edward III, though it is doubtful if the prefix "lord" was ever formally conferred. The lord mayor of London is elected at Michaelmas, and sworn into office on Nov. 8, is addressed as right honorable, and on state occasions in the City ranks next to the sovereign. His wife is called the lady mayoress. The mayor's court, a survival of the courts of record, was absorbed into the City of London court in 1920. Other English cities in which the mayor is known as the lord mayor are Birmingham, Bradford, Bristol, Hull, Leeds, Leicester, Liverpool, Manchester, Newcastle-upon-Tyne, Norwich, Nottingham, Plymouth, Portsmouth, Sheffield, Stoke-on-Trent, York. *See* Mayor; Provost. *Consult* London, W. J. Loftie, 1887.

**Lord Mayor's Show.** Procession to mark the formal installation of the lord mayor of London, when on Nov. 9 he proceeds in state to and from the law courts, to receive the sovereign's assent to his election. The first lord mayor's show was held in 1215, and the first by water in 1453. The Puritans suppressed the show for 16 years. After 1711, when the lord mayor was thrown from his horse, a coach was used. An elaborate coach, with panels by the Italian painter Cipriani, was employed from 1757 till 1896, when it was replaced by a copy. The medieval procession has been succeeded by a pageant, usually representative of some feature of the British Commonwealth—e.g. sport in 1946, agriculture in 1947. At the Guildhall banquet on the night of the show the prime minister makes an important speech, traditionally dealing with foreign policy.

**Lord of Appeal.** Persons qualified to sit in the house of lords when it acts as a court of appeal are mentioned under Law Lord. *See also* Appeal, Courts of.

**Lord of Misrule.** Name given to a lord of the revels in the Middle Ages. He is also generally known as the Abbot of Unreason (*q.v.*).

**Lord of the Isles.** Title formerly borne by chieftains who ruled the Western Isles of Scotland. The earliest was Somerled, who expelled Norse invaders from parts of the Hebrides in the 12th cent. The title is one of those borne by a prince of Wales.

**Lordosis.** Increase in the anterior curvature of the lower part of the spine. It may be secondary to dislocation of the hip-joint or disease of the hip-joint, but is most often the result of sustained faulty posture. *See* Spinal Column.

**Lord President of the Council.** In the U.K., one of the great officers of state and usually a member of the cabinet. The council is the king's privy council, and it first had a regular president in the time of Charles I. Previously the lord chancellor or some other high official had presided. Since about 1680 the office of lord president has existed, and under the party system has been filled by a member of the party in power. The duties were considerable as long as the council looked after matters for which separate departments were afterwards created, e.g. public health, education, and agriculture; but then the lord president did little more than preside over meetings of the privy council (*q.v.*). Sometimes, however, the office is held in conjunction with a more laborious one, by the leader of the party in either house, or by a member of the commons who is virtually deputy prime minister.

**Lord Privy Seal.** In the U.K., a high officer of state, whose functions are now almost obsolete. Probably in Norman times the English kings had their privy seal as well as great seal, and for this also there was a keeper, who may have been employed by the kings as a check on the power of the chancellor. By the 16th cent. it was usual for state documents approved by the king to pass to the keeper of the privy seal, who sealed them and passed them to the chancellor, who took this as authority to affix the great seal. In 1884 legislation altered the practice, so the work came to an end. The office remains, its holder ranking as the fifth great officer of state. It is held by a politician of cabinet rank. *See* Chancellor.

**Lord Provost.** Chief municipal magistrate in the larger Scottish cities, Edinburgh, Glasgow, Aberdeen, etc. *See* Provost.

## HOUSE OF LORDS AND ITS HISTORY

A. F. Pollard, M.A., Prof. of History, London University, 1903-31

*The information in this article is supplemented by those on Commons, House of; Parliament; Peerage; Privy Council. See also the biographies of notable peers, both past and present*

The term the house of lords was first used in 1544 to describe those councillors, hereditary and other, whom the crown was accustomed to summon by special writ to parliament. Later it was applied to the chamber of the palace of Westminster in which they sat.

This house was thus originally the king's council in parliament, and its members sat in parliament solely in virtue of a special summons from the crown; that, indeed, is their title at the present day, although a series of decisions by the lords themselves has deprived the crown of its power to refuse the writ of summons to peers of the U.K. Peerage in this sense is, however, a comparatively modern conception. Edward I was ignorant of it, and the only persons who were necessarily present in his parliaments were the members of his council. They were always summoned by writ from the lord chancellor, who shared with the king the distinction of sitting in parliament without any summons.

Edward I, however, established the custom of also summoning to parliament, besides the representatives of shires, boroughs, and lower clergy, a number of great tenants-in-chief of the crown, such as the archbishops, earls, and bishops, and some barons and abbots selected by the crown. No one had a right to be summoned; it was a matter of obligation and duty, of suit and service at the king's court due from tenants-in-chief in return for the lands they held of the king; and the general tendency in the Middle Ages was to evade it. The number of abbots sank early in the 14th century to 27, and the number of barons from 100 to less than 50.

In time, however, a place in parliament came to be a seat of authority, and the service to be regarded as a privilege which was sought by some and denied to others. A peculiar and not very consistent theory of baronage and peerage was evolved, which restricted "peerage" or "equality" to a narrowing circle of increasingly powerful barons, and associated it with the tenure of land, and subsequently with the possession of certain dignities created by the crown. Possessors of these qualifications succeeded in denying to those councillors who did not

possess them a vote in the great council chamber in parliament. Even More, who, as chancellor, summoned every peer to parliament, and presided over their deliberations, was denied a vote. To avoid this anomaly it became the custom to create the chancellor a peer, although as late as Anne's reign there was still a chancellor who was not a peer. Other members of the council—judges, attorney- and solicitor-generals, serjeants-at-law—while they continued to be summoned by special writ to parliament, were reduced to the position of advisers. The term house of lords came into use in Henry VIII's reign in obvious imitation of the phrase house of commons, which was some two centuries older.

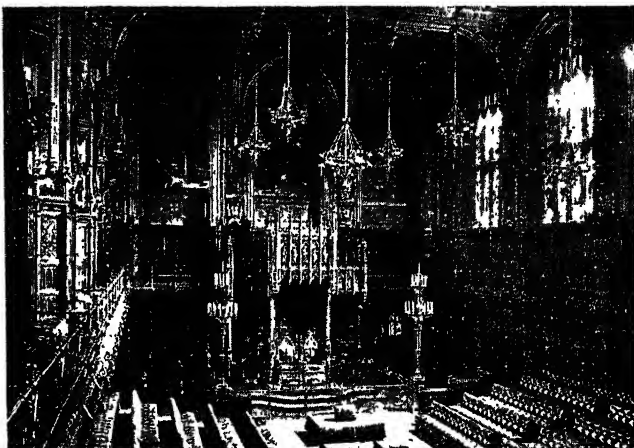
### Increase in Numbers

With the dissolution of the monasteries the abbots disappeared, and in the reign of Charles I the crown was finally denied the right of either omitting to summon a peer who had once been summoned before, or of refusing to summon the successor to a "peerage." The only means left to the crown of influencing the composition of its council in parliament was the creation of peers, and an attempt to limit this prerogative by the Peerage Bill of 1719 was frustrated. There were 44 temporal peers in 1529, and about 60 at the end of Elizabeth's

reign. James I added about 54, and on the eve of the Scottish union in 1707 there were 178. Sixteen Scottish peers were then added, and 28 Irish by the union of 1800, but the younger Pitt nearly doubled the total number by creations.

In 1893 there were 567, and in 1948 over 800. The bishops, however, remained fixed at 26; four Irish bishops, added at the union, disappeared with the disestablishment of the Irish Church in 1869, and the English bishops, with the exception of the two archbishops and the bishops of London, Durham, and Winchester, have to wait their turn of seniority before receiving a writ of summons. The disestablishment of the Church in Wales did not make any difference in the number of bishops sitting. So, too, the elected Scottish peers remain 16 and the Irish 28. The power of creating peers in order to pass a particular measure was only once used, and then by the Tories in 1712, the mere threat being sufficient to secure the passing of the Reform Act of 1832 and the Parliament Act of 1911.

This vast increase in numbers was accompanied by a decline in authority and influence. The peers as such lost in the middle of the 19th century that supreme judicature which they inherited from the king's great council in parliament. When the so-called house of lords now sits as a supreme court of appeal, only those members who hold or have held high judicial office can participate in its proceedings. The control of the peers over making law has also



House of Lords. Interior of the chamber from the public gallery, looking towards the thrones. On the left are government benches; on the right, opposition; between them is the raised back of the woolsack. From 1941 the chamber was used by the House of Commons, pending the rebuilding of their own chamber, destroyed by German bombs



tended to follow their control over its interpretation. The Parliament Act of 1911 removed from their veto any bill deemed by the Speaker to be a money bill; any other bill rejected by them in three successive sessions could be presented for the royal assent without their consent two years from the time it first received a second reading in the house of commons. The Parliament Act of 1949 reduced this time of waiting to one year.

Reform of the house of lords has often been proposed; but inter-party negotiations in 1948 for agreed reform of its composition and powers came to nothing.

**Lords and Ladies.** Variant name of *Arum maculatum*, also known as cuckoo-pint (*q.v.*) or wake-robin (*q.v.*).

**Lord's Cricket Ground.** Headquarters of the Marylebone Cricket Club. It is in St. John's Wood, London, N.W., near St. John's Wood station on the Bakerloo (Stanmore) line. Its founder, Thomas Lord (1757-1832), a native of Thirsk, Yorks, was groundsman at the White Conduit Club c. 1780, later had charge of a cricket ground for the earl of Winchester, and in 1787 started a ground of his own on the site of what is now Dorset Square. In 1811 he moved the turf to a new site close to the Regent's Canal, whence in 1814 he transferred it to its present position. Besides the home matches of the Middlesex club, the Oxford v. Cambridge and Eton v. Harrow fixtures and test matches against sides from the dominions take place here. *Consult* Lord's, 1787-1945, Sir P. Warner, 1946.

**Lord's Day Observance Society.** British religious organization. Founded by Bishop Daniel Wilson 1831, its history is one of evangelical campaigning against all forms of Sunday entertainment. Its London office is at 55, Fleet Street, E.C.4.

**Lord's Prayer.** **THE.** Prayer given by Christ to His disciples on the Mount (Matt. 6 *vv.* 9-13; Luke 11, *vv.* 2-4). Different versions are given by the two Evangelists and in the Book of Common Prayer. The Teaching of the Twelve Apostles, which is attributed to the 1st century A.D., directed that the prayer should be said three times a day by all Christians. Like the Creed, it was at first taught only to catechumens just before their baptism. As Christianity spread, it came to form a part of every service or fresh division of a service. The doxology (For Thine is the kingdom, etc.), a liturgical

addition, is Jewish in origin, but is found in The Teaching of the Twelve Apostles. S. Luke does not give it, and it is omitted from the R.V. text of S. Matthew. In the Book of Common Prayer, the Lord's Prayer, occurs twice in the daily offices, once in the Litany, and twice in the office for Holy Communion. The doxology was appended in 1661 for three of these: once in each of the daily offices



Lord's Cricket Ground, London. Part of the famous M.C.C. ground, also used by Middlesex, showing the pavilion. The total area is about 20 acres

and once in Holy Communion. The doxology is not included in the Litany. *See* Paternoster.

**Lord's Supper.** **THE.** Term used in the English prayer book for the service whereat Holy Communion is received. It is also much used by Nonconformists for their equivalent service, in which the partaking of bread and wine is sometimes regarded as a simple memorial rather than a sacramental act. *See* Communion, Holy; Eucharist.

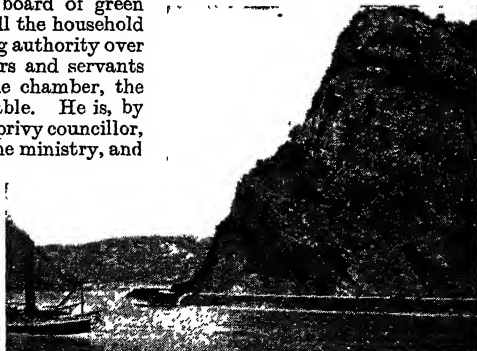
**Lord Steward.** Officer of the British royal household. He is the first great officer of the court. He presides over the board of green cloth and directs all the household below stairs, having authority over all the royal officers and servants except those of the chamber, the chapel, and the stable. He is, by his office, a peer, a privy councillor, and a member of the ministry, and receives his office from the sovereign in person. Many of his duties are actually carried out by a permanent official with the title of master of the household. *See* Royal Household.

**Loreburn, ROBERT THRESHIE REID, EARL** (1846-1923). British lawyer and politician. Born April 3, 1846, in Corfu, he was educated at Cheltenham and Balliol College, Oxford. He was called to the bar in 1871, and became Q.C. in 1882, having two years previously been chosen Liberal M.P. for Hereford. In parliament he represented Dumfriesshire continuously from 1886 until 1905. Reid was

solicitor-general and attorney-general in 1894; in 1898 he represented his country in the dispute over the boundary of Venezuela; and in 1905, when the Liberals returned to power, was made lord chancellor and a peer. He secured the passing of the Court of Criminal Appeal Act, 1907. Made an earl in 1911, he retired next year, not in full sympathy with the Liberal programme. In 1917 he came forward as a

follower of Lansdowne's peace policy, and he wrote *How the War Came*, 1919. Loreburn died childless, Nov. 30, 1923.

**Lorelei** or **LURLEI.** Rocky eminence on the right bank of the Rhine, near St. Goar, Germany. Over 400 ft. high, it stands in a narrow and formerly dangerous part of the river, and affords a remarkable echo. The legend that it is haunted by a siren who lures boatmen to their doom originated with a poem by Brentano, 1802. Later it was the subject of numerous songs and operas. Heine



Lorelei, Germany. The Lorelei Rock and bend of the Rhine, looking towards St. Goarshausen

and later poets and novelists have made the rock the theme of song and story. A railway tunnel runs through it.

**Lorentz**, HENDRIK ANTOON (1853-1928). A Dutch physicist. Born at Arnhem, July 18, 1853, he studied at Leyden, where he became professor of mathematical physics in 1878. Director of research at the Teyler institute at Haarlem from 1923, he continued to lecture at Leyden on physics. Awarded the Nobel prize for that science (with his pupil Zeeman) in 1902, he died Feb. 4, 1928.

Lorentz attempted to account for the fact that the speed of light appears the same for all observers, in whatever direction they may be moving (see Ether, p. 3155). Fitzgerald had suggested (1892) that all matter, including measuring rods, suffers a contraction in the direction of its motion. Lorentz worked out the amount of this contraction and of a similar change in time intervals. The Lorentz transformations (1903) connecting coordinates ( $x, y, z, t$ ) and ( $x', y', z', t'$ ) in relative motion with velocity  $v$  along the  $x$ -axis are:

$$x' = \frac{x - vt}{\sqrt{1 - v^2/c^2}}, \quad y' = y, \\ z' = z, \quad t' = \frac{t - (v/c^2)x}{\sqrt{1 - v^2/c^2}}$$

where  $c$  is the speed of light. These formulae later found their place in Einstein's special theory of relativity (*q.v.*).

**Lorenz**, ADOLF (1854-1946). Austrian surgeon. Born in Silesia, he graduated at Vienna university in 1880, and became professor of surgery there, specialising in orthopaedy. His treatise on Dislocation of the Hip, 1895, created considerable discussion, and his "bloodless" method of reducing congenital dislocation of that joint was new to surgery. By this method, which consists of manipulation of the muscles and, if necessary, the breaking of bones, there is no outward wound and no haemorrhage.

**Loreto**. North-easternmost and much the largest department of Peru. It is bounded E. by Brazil and N. by Ecuador and Colombia, which have conflicting claims to those parts of the territory which lie N. of the Marañon. Mainly in the Amazon valley, it is traversed by the Marañon and the Ucayali. Largely covered with forests, it yields rubber, cinchona, gold, tobacco, and salt. The climate is exceedingly hot and unhealthy for Europeans. Below the capital, Iquitos (*q.v.*), the Amazon vir-



Lorient, Brittany. Place Bisson, with the church of S. Louis, built 1709, on the left

tually begins. Area, 119,270 sq. m. The pop., consisting mostly of Indians, is 168,611.

**Loreto**. A city of Italy, in the prov. of Ancona. Situated on the slopes of a hill, 3 m. from the Adriatic, and 15 m. by rly. S. of Ancona, it is one of the leading places of pilgrimages for Roman Catholics, who are attracted to the Santa Casa or Holy House, in which it is said the Virgin Mary lived when at Nazareth. According to legend it was carried by angels from Galilee to Dalmatia, and from there to its present site. The Santa Casa is a small, stone building, encased by a marble screen designed by Bramante. A handsome Renaissance church with a rich dome was built over it, 1465-1587. A fire on Feb. 22, 1921, damaged the altar and destroyed the ebony image of Our Lady. Further damage was done in a German air raid, July 5, 1944.

**Loretto School**. Scottish public school, situated about 6 m. E. of Edinburgh. It owes its character to H. H. Almond, headmaster 1862-1903, who held advanced ideas on education, stressing the importance of attention to physical development as a prerequisite of mental alertness. Loretto boys still wear shorts and open flannel shirts and spend much time in the open air, whatever the weather. Numbers are strictly limited to 200 in the upper school and 53 in the junior. There are four sides: classical, modern, mathematical, and scientific. In 1946 the school's administration was transferred from a company to a board of trustees. *Consult* Loretto School Past and Present, H. B. Tristram, 1911.

**Lorian Swamp**. An extensive marshy tract in Jubaland, Kenya Colony, just N. of the equator.

**Lorient**. Town and seaport of France, in the dept. of Morbihan, Brittany. It stands near the junction of the Scorff and

the Blavet, 30 m. W.N.W. of Vannes. One of the chief naval stations in the country, it has state docks, ship-building yards, magazines, barracks, etc. Guns and naval armour are made. There is also a commercial harbour. Lorient has a trade in coal, etc., and is a fish-

ing centre for oysters and sardines. The church of S. Louis was built in the 18th cent. Pop. 11,838.

Lorient dates from about 1630, when some warehouses were built here. It flourished for many years as a station of the French East India Co., whence its name of l'Orient. On the dissolution of the company about 1770, the dockyards were taken over by the government, and developments of the 18th century made it into a first-class naval base. During the Second Great War the Germans converted this into a submarine base, and the town suffered heavily from Allied bombing. When the Germans withdrew E. in 1944, Lorient was one of the towns in which they left a garrison to prevent its use by the Allies, who contained but did not attack it. The garrison did not surrender until May 9, 1945.

**Lorimer**, SIR ROBERT STODART (1864-1929). Scottish architect, born Nov. 4, 1864. He experimented in domestic architecture, and won international fame as architect of the Scottish national war memorial chapel on the Castle Rock, Edinburgh, and of the new chapel for the Knights of the Thistle in S. Giles's cathedral. Knighted in 1911, he died Sept. 13, 1929. *Consult* a study by C. Hussey, 1931.

**Loriners' Company**. London city livery company. Originally a guild of bridle (Lat. *lorum*, thong, bridle-rein), bit, and spur makers, it had existed as a fellowship for about 500 years when it received its charter, 1711. It had a small hall in London



Loriners' Company arms

Wall, demolished c. 1765. The clerk's offices are at 31-33, High Holborn, W.C.1. The spelling, lorimer, survives in a family name.

**Loriquet.** A popular name for certain genera of small parrots. Allied to the lories, they are found in the E. Indies and Australasia, except New Zealand. One of the largest is Swainson's loriquet, which is  $6\frac{1}{2}$  ins. long in body, with a tail of almost equal length. Its general colour is green, with a purple head and blue under-parts,



Loriquet. Scaly-breasted variety, *Trichoglossus chlorolepidotus*

the under-wing coverts being red. It has a red beak with a yellow tip, lives mainly on honey, and generally congregates in large flocks in the forests. See Lory.

**Loris.** Name applied to a group of lemurs found in tropical Asia. They are small and have usually little or no tail, while the index finger of the hand is extremely small and feeble. They are nocturnal in habit and move with such slowness and stealth as to be called the slow lemurs. They vary in size from 8 ins. to about the size of a cat, are stoutly built, and have very broad heads. The eyes are round and conspicuous, rather suggesting those of an owl. The loris eats leaves, fruit, insects, eggs, and small birds. One species, the slender loris, is remarkable for its extremely slim limbs.

**Loris-Melikoff, MICHAEL** TARILOVITCH, COUNT (1826-88). A Russian soldier and statesman.



Count Loris-Melikoff, Russian soldier

Born at Tiflis (Tbilisi), he first saw service in the Caucasus, distinguished himself in the Crimean War, and took Kars in the Turkish War of 1877. A Liberal in politics, he held various civil posts, being minister of the interior to Tsar Alexander II. His administration was characterised by humanity and sincere efforts towards bringing about social reform. He died Dec. 22, 1888.

**Lorna Doone.** Romance of Exmoor by R. D. Blackmore (*q.v.*), first published in 1869. The scene is laid in Somerset and Devon in the 17th century, and deals with the feud between John Ridd (sup-

posed narrator of the story), a farmer of Oare, and the Doones, a band of outlaws who made their home in a fastness on Exmoor and lived by plunder and blackmail. The feud is terminated by the extinction of the outlaws and the marriage of John Ridd to Lorna Doone, a high-born, motherless maid who had been brought up amongst them. The story is built upon a substratum of fact, both John Ridd, a farmer famous for his immense physical strength, and a race of wild Doones having lived in the neighbourhood of Exmoor. Set against an historical background of the time of James II, touched in with great dexterity and fidelity to fact, the novel ranks among the best romances produced in the 19th century, distinguished by simplicity, vigour, purity of sentiment, racy humour, and much admirable word painting of nature. See Doones; Exmoor.

**Lorne.** District of Argyllshire, Scotland, which lies between Loch Awe and the coast. The marquess



Loris. Small animal of lethargic habit found in tropical Asia, also known as the slow lemur

of Lorne is one of the titles of the duke of Argyll, being borne as a courtesy title by his eldest son. It was long held by the nobleman who married the Princess Louise and became the 9th duke in 1900. (See Argyll, Duke of.) The Firth of Lorne is a strait separating the district of Lorne on the mainland from the island of Mull. There is a sympathetic description of the district in John Splendid, by Neil Munro.

**Lorne, MARION** (b. 1888). An American actress. Born in Pennsylvania, Aug. 12, 1888, she was educated there before making her stage debut in New York, 1905. On the London stage from 1915, she became known for her portrayals of fluffily-minded women in a series of comedies mostly written by her husband, Walter Hackett (*q.v.*), including Ambrose Applejohn's Adventure, 1921; Other Men's Wives, 1928; 77, Park Lane, 1928; Road House, 1932; Hyde Park Corner, 1935.

**Lörrach.** Town of Baden, Germany. It stands above the river Wiese, 5 m. N.E. of Basel. It manufactures textile goods, chocolate, and furniture, and has a trade in wine and fruit. It became a market town in the Middle Ages. Near is the castle of Rotteln, once a residence of the rulers of Baden.

**Lorrain, CLAUDE.** Name taken by the French painter Claude Gélée (*q.v.*), who was born in Lorraine.

**Lorraine** (Ger. Lothringen). Dist. of France. Between Luxemburg in the N. and Alsace in the S., it covers about 2,400 sq. m. The old duchy of Lorraine was much larger than the present district, as it included Nancy and the country thereabouts. Its chief rivers are the Moselle and the Saar. Population, 696,246. For map and illus. see Alsace, pp. 342-43.

Lorraine dates from 855, when once again the empire of Charlemagne was divided among his descendants. One part of it, a strip between France and Germany and including Alsace and Lorraine, was given to a certain Lothair, from whom it takes its name, through the Latin Lotharingia. After the fall of the Frankish empire, Lorraine was a bone of contention between France and Germany, and, roughly speaking, that has been its history ever since. Early in the 10th century it became a French possession, but in a few years it was handed over to Germany, and German it remained until 1542.

At first there were two Lorraines, Upper and Lower, but in a short time Lower Lorraine became known as Brabant, and the name was confined to Upper Lorraine, the country of the Moselle. From about 1050 this Lorraine was ruled by a line of dukes nominally vassals of the German kings, but so powerful that one of them was strong enough to defy the famous emperor Frederick II, and in 1542, when France and Germany were at war, Duke Anthony managed to make Lorraine independent of the latter country.

Its independence did not last very long, for French influence was making itself felt in the land. Duke Charles the Great, who reigned from 1545 to 1608, had been educated in France and was a son-in-law of King Henry II, and he assimilated French customs, which he transmitted to later dukes, and through them to the majority of their subjects. Cardinal Richelieu sent French officials to assist in governing the country; to this the duke objected, but without effect, and

in the end he became a vassal of the French king. The French obtained an increasingly firm hold upon Lorraine, and in 1736 they secured the duchy for Stanislaus, the exiled king of Poland, whose daughter was the wife of Louis XV.

In 1766, when Stanislaus died, Lorraine became part of France and remained so until 1871. In that year it was seized by Germany and by the treaty of peace was reduced in size. Nancy, hitherto the capital, was kept by France, but most of Lorraine was transferred to the conqueror and with Alsace became the imperial province of Elsass-Lothringen, known outside Germany as Alsace-Lorraine (*q.v.*).

The outbreak of the First Great War in Aug., 1914, saw considerable fighting near the Lorraine frontier, the recovery of the lost territory having long been one of the avowed aims of France. German forces advanced from Lorraine, occupied immediately the Briey ironfield, and gained command of the Vosges passes, and a French offensive opened on Aug. 10 ended in defeat on Aug. 23. But in two great battles before Nancy, Aug. 24-26 and Sept. 4-12, the Germans were checked, and thereafter fighting languished in the area until the closing weeks of the war, in 1918, when Foch concentrated large forces to envelop and capture Metz.

The whole of Lorraine, with Alsace, was restored to France in 1919 by the treaty of Versailles. But after the defeat of France, May-June, 1940, in which Lorraine and the Maginot line positions there were by-passed, the province was again annexed outright by Germany and incorporated within the Reich. In Nov., 1940, over 100,000 French were expelled, with the option of going to Poland, Silesia, or unoccupied France; and German families were brought in from the over-populated Saar and Ruhr regions to occupy their empty homes and farms. With the Saar, Lorraine became the German Westmark, with a status similar to that of Ostmark (Austria). Later, large numbers of French were conscripted for forced labour in Germany while others were drafted into the German army to fight against Russia.

As in Alsace, every attempt was made by the Germans to stamp out all trace of French national feeling. But a strong resistance movement grew up, which was finally able to assist in the liberation of

Lorraine by General de Lattre de Tassigny's 1st French army during the Allied advance to the Rhine, Feb., 1945.

The family of the old dukes of Lorraine is still represented in Europe. Duke René II had a younger son, Claude, who was the ancestor of the Guises, one of whom was Mary of Lorraine, the wife of James V of Scotland and the mother of Mary Queen of Scots. From Mary, through James I, the royal family of Gt. Britain is directly descended. A later duke, Francis, married the Empress Maria Theresa, and from them were descended the emperors of Austria, whose family is known as that of Hapsburg-Lorraine.

**Lorraine, CHARLES ALEXANDER, PRINCE OF (1712-80).** Austrian soldier and statesman. The son



Prince of Lorraine, Austrian soldier

of Leopold Joseph, duke of Lorraine, he was brother to the emperor Francis I, and married a sister of Maria Theresa. In the first Silesian war he was decisively defeated by Frederick I in the battle of Chotusitz or Ozaslau, in 1742; the next year he repeatedly defeated the Bavarians, occupied the country, and entered Alsace, but on the outbreak of the second Silesian war was sent to Bohemia, from which he drove the Prussians. Advancing into Silesia he was routed by Frederick at Hohenfriedberg, in 1745, and by Saxe at Raucoux in the Netherlands, in 1746. In the Seven Years' War Lorraine was utterly defeated by Frederick at Leuthen (*q.v.*), Dec. 5, 1757. He then returned to the Austrian Netherlands, which he governed wisely until his death, July 4, 1780.

**Lorraine, CHARLES LEOPOLD, DUKE OF (1643-90).** An Austrian soldier. He was born April 3, 1643, the son of Prince Nicholas Francis, a cardinal. In 1670 the French seized Lorraine, and expelled the reigning duke, Charles. On his death in 1675, his nephew, Charles Leopold, became titular duke.

He had previously twice been a candidate for the Polish throne.



Duke of Lorraine, Austrian soldier

He married Eleonora, the widowed queen of Poland, sister of the emperor Leopold I, and rejected the French offer of a part of his duchy. Serving in the Austrian army, he distinguished himself by helping to beat the Turks before Vienna in 1683, and in 1687 gaining the great victory of Mohács. He commanded in the war against France in 1689, but died April 18, 1690.

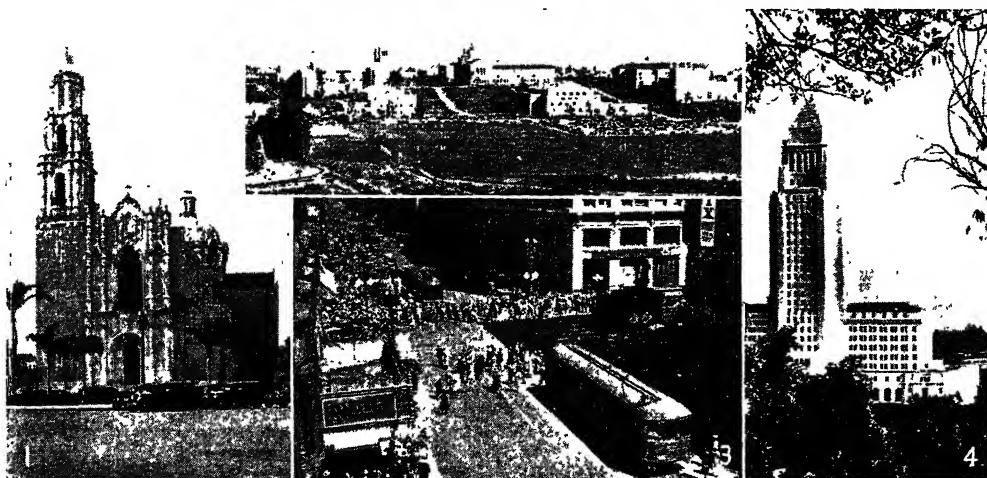
**Lorraine, CROSS OF.** Emblem first suggested by Adm. Muselier, and adopted by Gen. de Gaulle for the land, sea, and air forces he organized in 1940 for service with the Allies in the Second Great War. The cross of Lorraine had been borne by Joan of Arc, and first appeared in French heraldry on the arms of the dukes of Lorraine, in memory of their ancestor, Godfrey de Bouillon, who brought it back from the Holy land. The double-branched cross was used on the tombs of early Christians as a disguised cross to prevent desecration of their graves. In heraldry the cross is called Benedictine. See Free France illus.

**Lorry.** Name given originally to a large low horse-drawn truck. It is now applied colloquially to a large variety of power-driven vehicles used for transport, *e.g.* the steam lorry, motor lorry. A familiar example in the Second Great War was the three-ton truck for general transport duties. See Motor Vehicles.

**Lory.** A family of beautifully coloured parrots, found only in Australasia. There are about ten species, and all have rather long tails. The beak is less curved than in many parrots, and the long tongue is provided with a brush with which it gathers the nectar on which the birds largely feed. They also eat fruit, and usually congregate in small flocks. Lories readily learn to talk, and for this reason are in demand as pets. See Loriquet.

**Los (Span. *Islas de los Idolos*).** Group of islands situated off the coast of French Guinea. A British possession from 1818 until 1904, when it was ceded to France, it includes the four small islands, Coral, White (Île Blanche), Factory, and Tamara, which are of great strategic value, as they lie immediately W. of the port of Konakry. Principal product, groundnuts. Pop. about 800.

**Los Alamos.** Locality in the desert of New Mexico, U.S.A., 25 m. N.W. of Santa Fé. Here was one of the three principal



Los Angeles, California. 1. Roman Catholic cathedral of S. Vibiana. 2. University of California at Los Angeles, which occupies a site of 375 acres on the western outskirts. 3. Busy junction of main streets. 4. City Hall, the tower of which rises to a height of 464 ft.; at the top is a beacon for the guidance of air pilots

divisions of the atomic bomb project of the Second Great War. At this vast research and development laboratory, by the summer of 1945 many eminent scientists and their families had lived for two and a half years. This community had no post office and its mere existence was a closely-guarded secret. Extending over 70 sq. m., the project included 37 laboratories and plants, 201 other technical structures, and 302 apartment buildings. The pop. reached 6,000. *See Atomic Bomb.*

**Los Andes.** Former territory of Argentina. In 1943 it was divided between the provinces of Catamarca, Jujuy, and Salta.

**Los Andes.** Formerly a state of W. Venezuela. Named from the branches of the Andes running through it, it is now divided into the states of Táchira, Mérida, and Trujillo (*q.v.*).

**Los Andes** OR SANTA ROSA DE LOS ANDES. Town of Chile, in the prov. of Aconcagua. It stands on the Juncal on the W. slopes of the Andes, 18 m. by the trans-Andean rly. E.S.E. of San Felipe, and gives its name to an administrative district. Cattle raising and mining are carried on.

**Los Angeles.** City of California, U.S.A., co. seat of Los Angeles co., California's largest city, it is fifth largest municipality in pop. and, with its 451 sq. m., largest in area in the U.S.A. Since 1900, the pop. has doubled or more than doubled in every decade except 1930-40. The principal factors in this fabulous growth are the Calif. sunshine, climate, and soil productivity; the discovery of

oil; the development of a great man-made port which ranked third among U.S. ports in total tonnage in 1944; the enterprise and ingenuity that brought water and electric power hundreds of miles across desert and mountain; and the concentration of the U.S. motion-picture industry in several Los Angeles suburbs, the best-known being Hollywood (*q.v.*). The city sprawls across the 4,155 sq. m. of the co., having annexed some of the neighbouring communities. Among its best-known neighbours and appendages are Long Beach, Beverly Hills, Santa Monica, Venice, Glendale, Pasadena, and Inglewood.

Los Angeles stands on the Los Angeles R.; with its suburbs it stretches from the San Gabriel Mt. foothills across the coastal plain to San Pedro and Santa Monica bays on the Pacific; it includes a large part of the San Fernando Valley. The artificial harbour, constructed with federal govt. and city funds, embraces the ports of San Pedro and Wilmington and is connected with the channel of Long Beach harbour; it has a 40-m. waterfront. Los Angeles is the home-base of the U.S. Pacific fleet and is the nearest U.S. Pacific port to the Panama canal. Steam and motor ships connect it with Hawaii and many Pacific ports, while it is served by several rlys. and a municipal airport a mile square. Street rlys., including 1,000 m. of interurban electric lines, and motor buses serve Los Angeles and its satellites; private motor car traffic is exceedingly heavy.

Los Angeles architecture is a hodge-podge of styles and periods; but the civic centre, with its tall white gleaming edifices, is impressive. Buildings of special note are the 464 ft. city hall with a skyscraper tower, the 18-storey U.S. post office and court house, the county hall of justice, the hall of records, the Shrine auditorium, the Union passenger terminal, which is T-shaped and consists of thirty low, white stucco, red-tile-roofed units in mission architecture, the R.C. cathedral of S. Vibiana with a 135-ft. clock tower, seat of the Southern Calif. archdiocese, the county museum of history, science, and art, and the Angelus temple, a domed auditorium seating 5,300 in which Aimee Semple McPherson (*q.v.*) staged her meetings. Among educational institutions are the university of Southern California, the university of California at Los Angeles (the state university's southern division), Occidental college, the R.C. Loyola university of the South, and the California institute of technology at Pasadena. Churches exceed 600.

Los Angeles co. is first among U.S. counties in the value of products obtained from the soil. The country's first cooperative farm marketing project was organized here. Products include citrus and other fruits, almonds, walnuts, lettuce, celery, sugar beet, barley, alfalfa, tomatoes, flowers, and seeds.

In 1913 an aqueduct bringing water to the valley and the city through the Mohave desert from the Sierra Nevada mts. 233 m



away was completed. A newer aqueduct, bringing water from the Colorado R. to irrigate 250,000 acres and supply water to Los Angeles and twelve other cities, penetrates six mountain ranges and includes 38 tunnels. Electric power is brought over 266 m. of transmission lines from Boulder dam. Petroleum and its by-products constitute 85 p.c. of the port's exports. Los Angeles imports raw silk, sugar, copra, coffee, vegetable oils, whisky and other spirits, newsprint, and crude rubber. Her manufactures include petroleum and its products, aircraft and accessories, women's clothing for the newly developed Calif. fashion industry, chemicals and drugs, paint, glass, foundry and machine-shop products, furniture, celluloid for the film industry, structural and ornamental ironwork, tinned fruits, fish, and other foods, processed meat, and rubber products. Natural gas is abundant. Within 300 m. of the city are deposits of copper, salt, potash, graphite, limestone, marble, and onyx.

#### City of Colour and Charm

Los Angeles has a distinctive appearance, with its broad streets lined by palm trees, front lawns blanketed in golden California poppies and other flamboyant and semi-tropical flowers, and the low, white or pastel-coloured houses showing, for the most part, a Spanish influence. Los Angeles is noted for the number and variety of the religious, political, and other cults which flourish there, and for the informal, colourful attire of its inhabitants.

The diversified pop. of Los Angeles includes enough Mexicans to make it the fifth largest Mexican city in the world, negroes, Chinese, Japanese, and Filipinos; white inhabitants include aspirants to cinema fame, aircraft-factory and oilfield workers, retired farmers and their wives from the Middle West, the "Okies" and "Arkies" — natives of Oklahoma and Arkansas — who migrated here from the "dust bowl" areas in the 1930s, and wartime migrants from the South to aircraft plants and shipyards.

Settled in 1781, Los Angeles was at various times the capital of the Mexican province of California. It was captured by a U.S. naval force in 1847. Its city charter dates from 1850. The name is an abbreviation of the Spanish *El Pueblo de Nuestra Señora La Reina de los Angeles de Porciuncula*, or *The City of Our*

Lady Queen of the Angels of Porciuncula. The 1940 pop. of the city itself was 1,504,277, of the met. dist. 2,904,596. In the city, Mexicans constituted 17.1 p.c. of the foreign-born white pop. The pop. of Los Angeles co. was 2,785,643. In 1900, the city's pop. was 102,489.

M. McGowan

**Los Angeles.** Capital of the Chilean prov. of Bio-Bio. Between the rivers Bio-Bio and Laja, it is a branch terminus of the main rly. which runs through Candelaria. It was settled in 1739. Pop. about 12,000.

**Losch, OTHELIE ETHEL** (b. 1902). An Austrian-born British dancer, known as Tilly Losch. A Viennese, she appeared at the opera house when a child, and later became première danseuse under the direction of Reinhardt, making her American début in his production of *A Midsummer Night's Dream*, 1927. Engaged by C. B. Cochran, she achieved outstanding success at the London Pavilion in *This Year of Grace*, 1928, and *Wake Up and Dream*, 1929. She was the Nun in a revival of *The Miracle* at the Lyceum in 1932, and formed her own ballet company next year. During her marriage to the 6th earl of Carnarvon, 1939-47, she retired from the stage.

**Los Rios** (Span., the rivers). Inland province of Ecuador. It is situated on the W. slope of the Andes between the provs. of Bolívar on the E. and Guayas on the W. The surface is mountainous, but is well watered by the Guayaquil and many other rivers. The chief occupations are agriculture and stock raising. The capital is Babahoyo or Bodegas, a busy, thriving town. Area, 2,295 sq. m. Pop. est. 150,830.

**Lossie.** River of Morayshire, Scotland. It rises on Carn Kitty and follows a winding N.E. course past Elgin to the Moray Firth at Lossiemouth. Its length is 30 m.

**Lossiemouth.** Police burgh, seaport, and watering-place of Morayshire, Scotland. It stands at the mouth of the Lossie, 5 m. by rly. N. of Elgin. The harbour handles the third largest volume of white fish in Scotland. A situation on the Moray Firth attracts visitors, for whom there are good beaches and golf links. The burgh was founded in the 19th century from three villages, Lossiemouth, Branderburgh, and Stotfield. Here Ramsay MacDonald was born and buried. The ruined Kinneddar Castle and Spynie Palace are in the vicinity. Pop. 4,400.

**Lost Horizon.** Novel by James Hilton. Published in 1934, it was notable for its imaginative treatment of the adventures of an Englishman in a Tibetan monastery, Shangri-la (symbolising spiritual awareness), and its subtle evocation of Oriental mysticism. Awarded the Hawthornden prize, it was widely read, and was made into a film, with Ronald Colman, in 1937.

**Lost Property.** In English law finding is not keeping. A lost article remains the property of the losing owner; and he can sue the finder, or anyone else who has it in his possession, for its recovery; or, if he pleases, for damages for "conversion." A finder who converts property found to his own use may be charged with larceny. If a bill of exchange, promissory note, or cheque should be lost, the true holder can still sue on it, and the judge may order that the loss shall not be set up as a defence, provided the holder (loser) gives an indemnity to the persons sued on the instrument. If a document has been lost, secondary evidence of its contents may be given.

In London there are several lost property offices, including those of the Metropolitan Police, at 109, Lambeth Road, S.E.1, and of London Transport, at 200-202, Baker Street, W.1. The main line railways also have their own offices.

**Lost Ten Tribes, THE.** Term for the N. branch of the Hebrew race, which disappeared about 140 years before the dispersion of the Jews. In 722 B.C. the Assyrians destroyed the kingdom of Israel and removed many of the inhabitants to Media and other outlying parts of their empire, where they disappear from history. This disappearance has in modern times been a matter of anxiety to many Jews and Christians, especially to those who look for a restoration of the Jewish kingdom, in which the ten tribes ought to be represented, as well as Judah and Benjamin, to which the present Jews mainly belong. Consequently attempts have been made to prove the existence of the lost tribes in one part of the world or another.

About 1644 Antonio de Montezinos (Aaron Levi) announced that some Israelite tribes existed in America, and it was supposed that they had spread there from Tartary and China. In 1649 John Sadler suggested in his *Rights of the Kingdom* that the English were of Israelitish origin. The suggestion was developed by Richard Brothers (1757-1824) in many

volumes, and was adopted by John Wilson (1840), Edward Hine (1871), and a number of subsequent writers. The Anglo-Israelite doctrine has many adherents in English-speaking countries, though not countenanced by any scholars of repute. See British Israel World Federation.

**Lostwithiel.** Mun. borough and market town of Cornwall, England. It stands on the Fowey, 23 m. N.E. of Truro, with which there is rly. connexion. The chief buildings are the church of S. Bartholomew and the duchy hall, a 14th century building. The 14th century bridge, the nearest bridge to the sea, gave the town its strategic importance. In the Middle Ages markets, and fairs were held at Lostwithiel, and it became important under the earls of Cornwall. The stannary courts were held there, and there are slight remains of the stannary prison. It was given the right to coin tin, and some of the county business was carried on here. From 1305 to 1832 it sent two members to parliament, and it was made a corporate town by James I. In Sept., 1644, the parliamentary forces under the earl of Essex surrendered to the royalists at Lostwithiel, except only Essex and the horsemen who escaped. Near are Lanhydrock House and Restormel Castle. Pop. 1,325.

**Lot or Sort.** Object chosen or cast to determine a question. The question may be determined by its number, inscription, etc., or the way in which it falls when cast or thrown. Casting or drawing lots was an ancient method of divination. It was employed by the Israelites as a means of ascertaining the divine will in times of crisis or perplexity (Prov. 16, v. 33). The mysterious Urim and Thummim (Ex. 28; 1 Sam. 28) are believed to have been engraved images or jewels carried in a pouch under the breastplate (q.v.) of the priest, and used in this connexion. The lots seem to have been usually tablets of wood or stone suitably inscribed. They were used to detect a culprit (Josh. 7; 1 Sam. 14; Jonah 1); to choose an office-bearer (1 Sam. 10; 1 Chron. 24; Acts 1); in the selection of the sin-offering and the scapegoat (Lev. 16); and for the division of the land of Canaan (Num. 26). The practice was continued in the early Church, and is referred to by S. Augustine; by the Puritans, who were ridiculed by Swift on account of it; by the Bohemians in selecting bishops; and by the Moravians.

Practised to some extent in ancient Greece, drawing of lots was much more common among the Italians, being specially referred to by Cicero, Suetonius, Livy, and other writers. Distinction is made between the *sortes* (lots) in temples and those drawn commonly. The *sortes* were tablets of wood, bronze, or other material, inscribed with a verse or proverb. By Cicero's time this form of divination had become virtually obsolete, except at Praenestê, but the word *sortes* survived as a term for any kind of oracular deliverance. Virgil applied it to the Sibylline Books (q.v.). The opening at random of Homer or Virgil, the Bible or the Koran, and regarding the



Lostwithiel, Cornwall. Parish church of S. Bartholomew  
From a drawing by G. G. Harper

first line upon which the eye falls as prophetic is a form of drawing lots. See Divination; Lottery; Situla; Sortes; Urim and Thummim.

**Lot.** River of France. It rises in the Cévennes, on the Mont du Goulet, Lozère dept., and flows across the Central Plateau to join the Garonne at Aiguillon, Lot-et-Garonne. Its length is about 300 m., and its course mainly westward. Its chief tributaries are the Truyère and the Celé. The lower half of its course has been canalised. Like the Tarn, the Lot has carved the plateau limestones into a series of bluffs, or causses, with numerous caves where surface water disappears into sinkholes.

**Lot.** Department of France. In the S.W. of the country, it has an area of 2,017 sq. m. Much of it is hilly, and the chief river is the Lot. Others are tributaries of the Tarn and the Dordogne. The vine is extensively grown; horses, sheep, and cattle, poultry, and bees are reared; iron, coal, zinc, and limestone are worked. Wheat,

maize, and oats are also cultivated, as are potatoes, tobacco, and fruits. Cahors is the capital; other towns are Figeac, Gourdon, and Rocamadour. Pop. 154,897.

**Lot.** Son of Haran and nephew of Abraham (Gen. 13). He accompanied Abraham from Mesopotamia to Canaan, but as a result of strife among the herdsmen he parted from his uncle and was assigned the Jordan valley as his country, making his home at Sodom, whence he was taken captive by Chedorlaomer, but was rescued by Abraham. He was visited by mysterious messengers at Sodom, who rescued him and his family from the destruction of the city by fire. The story of Lot's wife has been connected with the fantastically shaped masses of rock-salt found S.W. of the Dead Sea. The narrative of the incestuous birth of Moab and Ammon is perhaps intended to stigmatise two of the chief enemies of Israel.

**Lota.** Harbour and coal port of Chile. It is situated on the E. side of Arauco Bay in the province of Concepción, just S. of Coronel. It exports the coal found in the Cousino mines, mainly for use on the state rlys. Here is the celebrated Cousino Park. Pop. 34,445.

**Lot-et-Garonne.** Department of France. An inland region in the S.W., it is in general flat and fertile. The Garonne flows right through it, as does its tributary, the Lot. There are some low hills in the N., while a little of the dept. is in the Landes district. Wheat and other cereals, tobacco, and vegetables are grown, and there are numerous orchards and vineyards. Iron is mined and is worked at Fomel and elsewhere. Agen is the capital, and other places are Marmande, Villeneuve-sur-Lot, and Nérac. The dept. covers 2,078 sq. m., and was formerly partly in Guienne and partly in Gascony. Pop. 265,449.

**Lothair.** Novel by Lord Beaconsfield, considered by many critics to be his masterpiece. It was written in 1870, and relates the story of Lothair, a young and wealthy nobleman who has left England to fight in the war of Italian independence; the central incident is the attempt to win him over to the R.C. Church. The leading characters were taken from real life. Lothair is the third marquess of Bute, who came of age in 1868, and joined the R.C. Church. The duke is the first duke of Abercorn. Cardinal Manning and Bishop Samuel Wilberforce appear under pseudonyms.

**Lothair I** (795-855). German king and Roman emperor. Eldest son of the emperor Louis I, he was a grandson of Charlemagne. A kingdom was found for him in Bavaria, 815, and in 817 he was crowned joint emperor at Aix-la-Chapelle and in 823 at Rome. He died Sept. 29, 855, in the monastery of Prüm, leaving three sons. It was the division of the kingdom between these three at Verdun in 843 which gave rise roughly to the modern France and Germany with between them a "middle kingdom" called Lotharinga (after the second son Lothair) and stretching from the North Sea to the Alps. It was divided 959 into two parts, the northern half of which later became Brabant, the southern Lorraine, of which the present Lorraine (a corruption of Lotharinga) is a part.

**Lothair II** (c. 1060-1137). German king and Roman emperor. The son of a count in Saxony, he inherited his father's lands and soon became a man of mark there. Although a rebel against the emperor Henry IV, he was for a time more friendly to Henry V, who about 1106 made him duke of Saxony. As such he led the Saxons in their enmity to the family to which Henry V belonged, and until the death of that monarch in 1125 there was constant trouble between him and his powerful vassal. In 1125 Lothair was crowned German king in preference to the late king's nephew, Frederick of Hohenstaufen, and a war with the Hohenstaufen family followed quickly. In this the new king was successful. His later years were passed in Italy, where he was crowned emperor in 1133, and in a renewed quarrel with the Hohenstaufen, which on the whole enhanced his authority in Germany. Lothair died on his return from Italy, Dec. 4, 1137.

**Lotharingia**. Name of a medieval kingdom of Europe. See Lorraine; Lothair I.

**Lothario**. Character in Nicholas Rowe's tragedy *The Fair Penitent* (1703). From him is derived the phrase a gay Lothario, signifying a deceiver of women.

**Lothbury**. London thoroughfare. First called Lodebure, it is N. of the Bank, between Coleman Street and Throgmorton Street, E.C. In the 16th century it was the abode of founders or candlestick makers. The old Founders' Hall which stood from 1531 to 1845 in Founders' Court, was occupied by the G.P.O. The foundation of S. Margaret's Lothbury, has been traced back to the 12th century.

The church, rebuilt by Wren in 1690, with a finely carved font by Grinling Gibbons and a wooden chancel screen, belonged to the abbey of Barking until 1540, when the living passed to the crown.

**Lothian**. A dist. of Scotland which stretched originally from the Cheviot Hills to the Forth, thus including the counties of Berwick, Roxburgh, Haddington, Edinburgh, Linlithgow, and probably Selkirk. Originally a Brythonic dist., it was included in the 7th century in the English kingdom of Northumbria, having probably been conquered by King Ethelfrith. For many years its possession was disputed between the English and the Scots, but after 1018, when the Northumbrians were decisively beaten by Malcolm II, king of the Scots, it was annexed by the latter. At present the Lothians include only the three shires of Haddington, now called East Lothian (*q.v.*), Edinburgh, now Midlothian (*q.v.*), and Linlithgow, now West Lothian (*q.v.*).

**Lothian, EARL AND MARQUESS OF**. Scottish titles borne by the family of Kerr. Mark, the first earl, belonged to the noted border family of Ker of Cessford. Prominent in Scotland in the time of James VI, he was made Lord Newbattle in 1587 and earl of Lothian in 1606. His son left only a daughter, but she married a Kerr, and so the title remained in the family. This William Kerr became the 3rd earl, and having taken part in public life in England, he died in 1675.

His son, Robert, the 4th earl (1636-1703) inherited also the earldom of Ancrum from an uncle, and was made a marquess for his services to William III in 1701. A succession of marquesses in the direct line followed. The 11th is noticed separately below, and the 12th was Peter Francis Walter Kerr (b. Sept. 8, 1922). The chief seats of the family are Melbourne Hall, Derby, and Monteviot, Roxburghshire. The marquess sits in the house of lords as Baron Ker, and his eldest son is known as earl of Ancrum. The family has adopted the spelling Kerr in preference to Ker (*q.v.*).

**Lothian, PHILIP HENRY KERR, 11th MARQUESS OF** (1882-1940). British politician and diplomatist.

Born April 18, 1882, and educated at the Oratory School and New College, Oxford, he edited *The*



11th Marquess of Lothian

*Round Table*, 1910-16. Thence until 1921 he was secretary to the prime minister, D. Lloyd George. He succeeded to the peerage in 1930, and in 1931 was appointed chancellor of the duchy of Lancaster in the National govt. Parliamentary under-secretary in the India office and chairman of the India franchise commission, he retired from the govt., 1932, on the tariff issue, as a convinced free trader. As British ambassador in Washington from April, 1939, he did much to ensure U.S. friendship for Great Britain during a critical period. An eloquent appeal to the U.S.A. to help Great Britain to the utmost in carrying on the war against Germany was read on his behalf at a banquet in Baltimore, Dec. 11, 1940, and made a great impression. He himself was too ill to attend the banquet, and died the following day.

**Lothian Regiment**. Another name for the Royal Scots, who are recruited mainly in Edinburgh and the Lothians. Its official title was changed in 1920 from *The Royal Scots (Lothian Regiment)* to *The Royal Scots (The Royal Regiment)*. See Royal Scots.

**Loti, PIERRE** (1850-1923). Pen name of French novelist, Louis Marie Julien Viaud. Born at Rochefort, Jan. 14, 1850, at 17 he entered the navy, becoming captain 1906. He published his first story, *Aziyadé*, in 1879. In 1880 came *Rarahu*, reprinted in 1882 as *Le Mariage de Loti*, the story of an Englishman and a Tahitian girl, which won him instant popularity, and he rapidly produced a series of somewhat sad, sentimental stories and impressions of travel, which led to his election to the Academy in 1891. Loti's experiences at sea form the background to *Le Roman d'un Spahi*, 1881; *Mon Frère Yves*, 1883. In *Le Pêcheur d'Islande*, 1886, a tender, tragic romance of Breton life, he broke new ground, but his melan-



Pierre Loti, French novelist



choly remained. Later came *Propos d'Exil*, 1887; *Fantôme d'Orient*, 1892; *La Galilée*, 1895; *L'Inde sans les Anglais*, 1903. Lotti died, June 10, 1923. *Consult Life*, E. d'Auvergne, 1926

**Lotion** (Lat. *lotio*, washing). Name for a solution of drugs intended for external use. Lotions may be solutions in water or alcohol, and are known as antiseptic, anti-pruritic, astringent, sedative, or stimulating, according to their uses and contents. Some are known as washes, e.g. mouth washes. Antiseptic lotions may contain boric acid, carbolic acid, etc.; soothing lotions, zinc compounds, calomine, etc.; and stimulating lotions, ammonia, cantharides, etc. Evaporating lotions are prepared with spirits of wine or methylated spirit and water, and are chiefly used for the treatment of sprains and inflammations.

**Lotta Svard**. Finnish national women's organization. Named after a heroine of the war between Sweden and Russia in 1808-09, the organization became prominent in the Russo-Finnish campaign of 1939-40, when some 100,000 women undertook voluntary non-combatant duties.

**Lottery**. In English law, a distribution of prizes by lot or chance. In Tudor and Stuart times lotteries were popular in England, and were even promoted by the state as a source of revenue. But they proved so demoralising, and were associated with so much cheating, that in 1802 all lotteries not authorised by parliament were declared illegal. The last state lottery was held in 1826.

The Betting and Lotteries Act, 1934, made legal two kinds of lottery. The first is the small lottery or raffle held at an entertainment such as a bazaar. This will be legal, however, only if the whole proceeds of the entertainment (including proceeds of the lottery), after deductions for certain expenses, are devoted to purposes other than private gain. None of the prizes may be money; tickets must not be resold; nor may the result of the lottery be announced except on the premises during the entertainment.

The second type of legal lottery is the private one promoted for, and the sale of tickets confined to, (1) members of one society established for purposes not connected with gaming; (2) persons who all work on the same premises; (3) persons who all reside on the same premises. The whole proceeds, after deductions for expenses, must

be used either as prizes or for the objects of the society. Detailed rules are laid down in the Act as to what must appear on the tickets and the methods of selling them.

In unlawful lotteries the following acts are illegal: printing the tickets; selling them or advertising the sale; advertising the lottery; publishing a list of prizewinners; publishing anything describing the draw or relating to the lottery which is calculated to induce people to participate; bringing or inviting any person to send into Great Britain any ticket for sale or distribution; sending out of Great Britain any money or valuable thing received in respect of the sale of a ticket or any document recording the sale or identity of the holder. Thus the mere purchase of a ticket is (probably) not an offence. *See Betting*.

**Lotti**, ANTONIO (1664-1740). Italian composer. Born and educated in Venice, in 1692 he became assistant organist at S. Mark's and in 1736 director of music. Composer of many masses and other pieces of sacred music, he also wrote elegant trios and quartettes, and published a collection of duets and madrigals in 1705. His operas were popular and so widely known that Lotti was invited to Dresden by the elector to write operas for the theatre there, 1717-19. He died Jan. 5, 1740.

**Lotto** OR **KENO**. A gambling game played with special cards, popular in passenger liners. On the cards are marked combinations of numbers from 1 to 90. On each card are arranged three rows of five numbers, there being no duplicate numbers on any one card. Every card bears across its face a distinguishing number which the player must see registered, as he has to pay a certain sum for the card. Any quantity of cards may be chosen. The banker puts 90 small numbered balls into a bag or other receptacle which allows one ball to escape at a time. He calls aloud its number, and the player first to cover with disks the five numbers contained in any horizontal row claims the pool or prize. *See House*.

**Lotto**, LORENZO (c. 1480-c. 1556). Italian painter. He was born at Venice, and studied under the Vivarini. About 1512 he settled at Bergamo, where many of his paintings are preserved; among them his masterpiece, the *Madonna and Saints* of S. Bernardino. In 1532 he was again at Venice, but in 1552 removed

finally to Loreto, where he died in a monastery. His religious pictures are characterised by ecstatic emotion, and are sometimes highly dramatic.

**Lotus**. Genus of herbs and subshrubs of the family Leguminosae. They are world-wide in their distribution, and



Lotus. Flowers and circular leaves of the sacred lotus of India and China

five species are recognized as British. The bird's-foot trefoil (*L. corniculatus*), is abundant in every pasture and waste. From a perennial woody root stock tufted stems arise with a spreading habit, and with distant leaves divided into four or five oval leaflets. The clusters of bright yellow, pea-like flowers are in evidence all through summer, and are succeeded by slender, curved pods. There is no connexion between these plants and the lotus of the lotus-eaters, which is supposed to be the jujube-tree (*Zizyphus lotus*), a species of Rhamnaceae and a native of the Mediterranean region.

The sacred lotus of the Egyptians, referred to by Herodotus, which figures in the sculptures of the ancient temples, was a water-lily (*Nymphaea lotus*), while the tamara or sacred lotus of India, China, and Tibet is the *Nelumbium speciosum*. The latter plant figures also on the Egyptian monuments, but less frequently; and as it is no longer found in the Nile, it is supposed that it was an introduction from India. It differs from the other water-lilies in the fact that neither leaves nor flowers float on the surface, but are raised on long stalks above the water. It was accurately described by Theophrastus (368-286 B.C.).

**Lotus-eaters** (Gr. *Lotophagi*). In Greek mythology, a people whom Odysseus came across in his wanderings. They were accustomed to eat of a fruit called the lotus, which caused those who did so to lose all desire to return to their native country. It has been identified with various plants, more particularly with the jujube (*q.v.*). According to Herodotus, a people of the name inhabited the N. coast of Africa and the island of Merminx (Jerba), also called Loto-

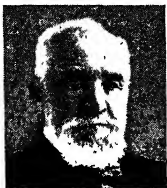
phagitis, in Tunisia, at the entrance to the gulf called Syrtis Minor. The legend is the subject of a famous poem by Tennyson.

**Lotze, RUDOLF HERMANN** (1817-81). German philosopher. Born at Bautzen, Saxony, May 21, 1817, he qualified at Leipzig in philosophy and medicine. He became professor of philosophy at Göttingen in 1844 and in 1881 at Berlin, where he died during his first term, on July 1. Lotze founded what he called teleological idealism. Starting as a physiologist with the materialism of Herbert Spencer, modified through the influence of Leibniz, Herbart, and Hegel, he regarded the mechanical and individualistic theory of existence as valid, but incomplete. One absolute being, who must be a personal God, is the origin of all that exists; the course of the world proceeds in accordance with a final purpose. Metaphysics has its starting-point, not in itself, but in ethics. Philosophy cannot attain to complete truth; it can only acquire a view of the world, which sets before us valuable aims in life and shows us how to reach them. His most important work is *Microcosmos, Ideas on the History of Nature and of Mankind*, Eng. trans. 4th ed. 1890. *Consult* critical study by H. Jones, 1895.



Rudolf H. Lotze, German philosopher

**Loubet, ÉMILE** (1838-1929). A French statesman. He was born at Marsanne, Drôme, on the last day of 1838, the son of a peasant proprietor, and studied law in Paris. Admitted to the bar, he was by turns mayor of Montélimar; president of the council of Drôme; deputy for Montélimar, 1876; senator, 1885; minister of public works, 1887-88; premier and minister of the interior, 1892. Then he became president of the senate, 1895, and in 1899 took office for seven years as president of the republic.



Émile Loubet, French statesman  
Manuel

As mayor Loubet initiated local improvements and financial economy; as minister of public works he directed a huge scheme for the better drainage of Paris; as

prime minister and president he promoted the better relations of France with Great Britain, Italy, and Russia. Few French statesmen have been more popular. Naturally a student, he kept aloof from party cliques, eschewed needless ceremony, married Marie Denis, daughter of an ironmonger of Montélimar, and was called "the lovable-looking man in the blue sash." He died Dec. 20, 1929.

**Loudon, ERNST GIDEON, BARON VON** (1717-90). Austrian soldier, born Feb. 2, 1717, in Livonia. His family came originally from Scotland, and his father was an officer in the Swedish service. Ernst entered the Russian army, in which he served against Turkey, but in 1741 transferred his services to Austria and became a Roman Catholic. During the Seven Years' War he won a reputation as a fighting general. Among his successes were victories over Frederick the Great at Kunersdorf and Landeshut, but he was beaten at Liegnitz. Marshal Loudon commanded an army in the war of the Bavarian succession, 1778, and captured Belgrade from the Turks in 1789. His abilities were well rewarded by the Austrian rulers. He died July 14, 1790. *Consult* Life, G. B. Malleon, 1894.



E. G. von Loudon, Austrian soldier

**Loudoun**. Parish, castle, and hill in Ayrshire, Scotland. The parish is a large one on the river Irvine. Loudoun Castle, about 7 miles E. of Kilmarnock, is an ancient stronghold, restored in the 17th cent., and was long the seat of the earls of Loudoun. The hill is near the borders of Ayrshire and Lanarkshire. Here in 1307 Bruce defeated the English.

**Loudoun, EARL OF**. Scottish title held from 1633 by the families of Campbell and Abney-Hastings. John Campbell (1598-1663) married a granddaughter of Hugh, 1st Baron Loudoun, and himself took that title. In 1633 he was made an earl, and the title passed to his descendants. The 5th earl was succeeded by his daughter Flora, who married the 1st marquess of Hastings, and the earldom subsequently passed to successive marquesses of Hastings, until the higher title became extinct in 1868. A sister of the 4th marquess then inherited the earldom. Her son, Charles Edward Abney-

Hastings, 11th earl, died in 1920, and was succeeded by his niece, Edith Maud, as countess. The title carries with it the barony of Botreaux (cr. 1368).

**Loudspeaker**. Sound-diffusing portion of a sound reproduction apparatus. The loudspeaker converts audio-frequency electric currents into the corresponding sounds, and may be of either the magnetic diaphragm or the moving coil type. Loudspeakers range in strength from the small one incorporated in the home radio receiver to the large one used in the open air which may have a range of 10 m. Loudspeakers on the principle of line telephone systems are used in railway stations to announce train times, in dance halls to ensure synchronisation, and in churches and concert halls to improve acoustics. Similar types at aerodromes and in camps and ships broadcast instructions to personnel. A loudhailer is a special variety enabling ships at sea to communicate by sound over short distances; it has largely replaced the megaphone. *See* Amplifier; Radio; Sound Reproduction.

**Loudun**. Town of France. In the dept. of Vienne, it is 45 m. S.W. of Tours, with which it is connected by rly. It has an agricultural trade and a few manufactures, but its chief interest is historical. The keep of the castle still stands, and there is also a gateway, a relic of the town's fortifications. The church of S. Croix is now used for secular purposes; S. Pierre is a Gothic building. Loudun was a Roman station, and Roman remains have been found here. In the Middle Ages it was a fortress in the co. of Anjou, and its castle was a residence of the counts.

**Lough**. Irish form of the word loch, used for lakes and for deep coastal indentations. Sea loughs are usually due to glacial action, and many river loughs have been formed by the solution of the limestone bed of a river. *See* Erne; Neagh; Loch.

**Loughborough**. Mun. borough and market town of Leicestershire, England. It stands on the Soar,



Loughborough arms

10 m. N. by W. of Leicester, and has rly. stations. The chief building is the large old church of All Saints, with a fine tower. There are a technical college (*v.i.*), a grammar school for boys, and a high school for girls. Other buildings include



Loughborough war memorial, a carillon tower with 47 bells. See also Carillon illus

the town hall and free library. The staple industries concern hosiery, heavy engineering, electrical apparatus, and coach work; also dyeworks and bellfounding. Loughborough, which gives its name to a county constituency, existed in Anglo-Saxon times and had

a market in the Middle Ages, but it was a small place until the introduction of lace manufacture about 1800. This was supplanted by the hosiery trade. The place was made a borough in 1888. Market days, Mon. (cattle), Thurs., Sat. Pop. est. 33,500.

**Loughborough College.** A school of technical and scientific education at Loughborough, Leics. Founded in 1918, it accommodates 750 students in 16 residential halls. The school of engineering offers courses in mechanical, electrical, automobile, aeronautical, and civil engineering, and maintains its own workshops, generating station, and an aerodrome. Students spend alternate weeks in lecture rooms and in the workshops. The school of applied science gives instruction in chemical technology and engineering, and has facilities for research. There is also a department for the training of teachers. Under a department of physical education come gymnastics and sport, for which there are 120 acres of playing fields.

**Loughrea.** Market town of co. Galway, Eire. It stands on Lough Rea, 18 m. S.W. of Ballinasloe, with a rly. station. The chief building is the modern cathedral of the R.C. diocese of Clonfert. The town grew up around a castle built by a Norman baron, and was at one time a fortified place. There are a few remains of a religious house. Market day, Thurs. Pop. 2,891.

**Loughton.** Part of the urban district of Chigwell, Essex, England. It is on the Central Line, 11½ m. N.N.E. of Liverpool Street, also served by Green Line, and on the borders of Epping Forest. The 12th century church of S. Nicholas was pulled down in 1847

and the memorial chapel of S. Nicholas built on its site in 1877, some 16th century brasses being preserved. The existing parish church of S. John the Baptist dates from 1846; that of S. Mary from 1871. The public hall was erected in 1883 (see Lopping). Loughton Hall, 1879, stands on the site of a Tudor mansion, rebuilt in the 17th century by Sir Robert Wroth, and burnt early in the 19th century, when the pictures and 10,000 books and MSS. were destroyed. Ben Jonson refers to the gay doings at the hall in his time. The history of the manor or manors goes back to the days of the Confessor. Loughton is mentioned eight times in Domesday, and is associated with the abbots of Waltham and Stratford. It became a royal manor in 1540, and was later incorporated with the duchy of Lancaster. From the family of Wroth it passed to that of Maitland, and is now owned by the L.C.C. Pop. est. 15,000.

**Louis** or **LOUIS D'OR.** French gold coin. It was minted by Louis XIII in 1640, and continued in use till after the Revolution. It was



Louis. Obverse and reverse of the old French gold coin. ¾ actual size

worth about 16s., and half and double louis were also coined. The name is also given colloquially to the 20-franc piece or napoleon.

**Louis.** A masculine Christian name. Louis is the French form, the English being Lewis, the German Ludwig, and the Italian Lodovico. It originated among the Franks as Chlodwig, and has been popular with rulers, having been borne by 19 kings of France, a number of German emperors and kings, and by kings of Hungary and princes in Italy. The emperor Louis I counts also as Louis I, king of France, as his realm included that country. For kings, Louis is used instead of Ludwig in this work. See Ladislav.

**Louis I** (778-840). German king and Roman emperor. He was third son of Charlemagne, who had him crowned king of Aquitaine in 781. The deaths of his elder brothers made him the emperor's chief heir. He was crowned joint emperor in 813, and in 814 on Charlemagne's death became

its head. He died June 20, 840. Louis is called le Debonair and also, for his generosity to the Church and regard for morality, the Pious. His last ten years were spent in warfare with his sons about their respective shares of his empire. One of them was the emperor Lothair, another Louis the German, and the youngest was the emperor Charles the Bald.

**Louis II** (c. 822-875). German king and Roman emperor. The eldest son of the emperor Lothair I, he was associated as king of Italy with his father in the government of that country from 844, and showed great energy in quelling the disorder in the S. He made many efforts to expel the Mahomedan invaders. He established Pope Benedict III, who was threatened by a rival, in 855, and in the same year, on his father's death, he succeeded to the empire and Italy. On his brother Charles's death in 863, Louis inherited Provence. He recovered Naples and Apulia for the empire, and was preparing to conquer Calabria and Sicily when he died, Aug. 12, 875.

**Louis III** (880-928). German king and Roman emperor. The son of Bosco, king of Provence, and Ermengard, daughter of the emperor Louis II, he was adopted, on his father's death, in 887, by the emperor Charles the Fat. Crowned in Rome by Benedict IV in 901, he was speedily expelled from Italy, but returned in 905, and in July was overpowered at Verona by agents of Berengar of Friuli, blinded, and deposed. He lived thenceforward at Arles, his Provençal capital. By his wife, Adelaide, daughter of Rudolph of Upper Burgundy, Louis became the ancestor of the house of Savoy.

**Louis IV** (1287-1347). German king and Roman emperor. The son of Louis, duke of Bavaria, he was chosen emperor in 1314 by four electors—others choosing Frederick of Austria, known as the emperor Frederick III or IV. A diet at Nuremberg having confirmed his election Louis defied Pope John XXII, and was excommunicated in 1324. He marched into Italy, was crowned emperor in Rome, January 17, 1328, and set up an antipope, Nicholas V, but had to take flight in Aug. In 1338 an electoral union declared that the election of emperor was valid without confirmation by the pope. Louis seized Lower Bavaria in 1341; Tirol and Carinthia came to his family of Wittelsbach by marriage. In 1346 by his marriage to

a daughter of the count of Holland, he inherited Holland, Zeeland, Frisia, and Hennegau. On Oct. 11, 1347, Louis was killed while hunting.

**Louis.** Name of 18 kings of France. The emperor Louis I ranks as the first of them, as France as well as Germany was in his empire. Louis II was the son of the emperor Charles the Bald. He ruled over the West Franks, as the French were then called, from 877 to April, 879. Louis III was the son of Louis II. He reigned with his brother Carloman over the Franks from 879 to Aug., 882.

**Louis IV (921-54).** King of France, 936-54. A son of Charles III, he passed his boyhood in exile in England, to which fact he owes his name of Outremer, or beyond the sea. In 936 the French chose him king and, returning, he was crowned at Laon. His reign was mainly spent in fighting his numerous foes, who included the emperor Otto the Great. During a war with the Normans he was captured, and for about three years was the prisoner of Hugh the Great, count of Paris. The king died from the effects of a fall while hunting, Sept. 10, 954. His successor was his son Lothair.

**Louis V (c. 967-987).** King of France, 986-87. The son of Lothair, he began to reign in March, 986, and died in May, 987. He was the last of the Carolingian kings, and his successor was Hugh Capet.

**Louis VI (1078-1137).** King of France, 1108-37. His father, Philip I, made him joint king in 1100, and left the government in his hands. His great rival was Henry I of England, and Louis surrendered Brittany and Maine by the peace of Gisors, 1113. To check the nobles Louis favoured the peasants and burghers, established communes, granted charters, and asserted his authority in the provinces by commissioners. Louis VI died Aug. 1, 1137.

**Louis VII (1120-80).** King of France, 1137-80. After reigning for six years jointly with his father Louis VI, he succeeded him in 1137, marrying in the same year Eleanor, heiress of Aquitaine, who, after he had divorced her, married Henry of Anjou, 1152, bringing him Guienne and Poitou. Henry having succeeded to the English throne two years later, a struggle between the two kings broke out in 1157, and lasted intermittently for 20 years. The English king's power grew until 1173, when Louis attacked him at the head of a great alliance which included Flanders, Scot-

land, Normandy, Brittany, and Henry's rebellious sons. The design failed, and peace was made at Ivry in 1177. Louis died Sept. 18, 1180.

**Louis VIII (1187-1226).** King of France, 1223-26. Born in Paris, Sept. 5, 1187, he was the eldest son of Philip Augustus. He assisted his father in his war against England, and in 1216, answering an invitation of some English barons, he invaded that country in order to depose John. He met with a number of successes, but, in 1217, John being then dead, he was beaten at Lincoln and by a treaty agreed to give up his claim. He then

took part in the crusade against the Albigenes. In 1223 Louis became king, but he only reigned until Nov. 8, 1226, when he died at Montpensier. In that short time, however, he had captured Poitou from the English, and had taken Avignon and crushed the religious insurgents in Languedoc. He married Blanche, daughter of Alphonso, king of Castile. Of their large family the eldest son was S. Louis.

**Louis IX (1214-70).** King of France, 1226-70, known as Saint Louis. Born at Poissy, April 25, 1214, he was the son of Louis VIII and Blanche of Castile. His mother



Louis IX a prisoner of the Saracens after his defeat at Damietta. From the painting by A. Cabanel in the Panthéon, Paris

subjected him to a rigorous religious training, and his personal piety caused him to become known as perhaps the most devout of monarchs. His father died in 1226, and his mother, acting as regent, did much to curtail the power of the great feudal nobles, so that when he took up the work of administration in 1236 he was free to devote himself to the task of regulating civil affairs, setting up departments for the control of government, justice, and finance. Frank and affable, though modest and reserved, he showed himself as precise in worldly as in spiritual matters.

In 1242 he forced Henry III of England to renounce his claims to Normandy, Anjou, Maine, and Poitou, and in 1248 directed the seventh crusade, attempting to reach Palestine through Egypt; but although he took Damietta, he was forced to retreat, and was ultimately captured, along with the remains of his army. Upon payment of a heavy ransom he was set at liberty in 1249, and succeeded in reaching Palestine, where, however, he accomplished nothing of military importance. Returning to France in 1254, he made preparations for another crusade, the objective of which was Tunis. But when besieging that city in 1270 he fell a victim to the plague, and died Aug. 25.

*Bibliography.* *Histoire de St Louis*, J. de Joinville, Eng. trans. J. Hutton, 1870; St. Louis et son Temps, H. Wallon, 1875; *The Invasion of Egypt* by Louis IX, E. J. Davies, 1898; *Lives*, F. Perry, 1901; M. R. Toynebee, 1930.

**Louis X** (1289-1316). King of France, 1314-16. Eldest son of Philip IV and Joanna of Navarre, he was born Oct. 4, 1289, and succeeded his father Nov. 29, 1314. A weak prince, he was controlled by his uncle Charles of Valois, and was powerless against the turbulent nobles, who formed a league for the restoration of their old privileges, and wreaked vengeance on the officials of the late king. Opposed also by the Church and the communes, Louis endeavored to gain the provinces by charters, and enabled serfs to purchase freedom. He also sold offices to raise money for a war with Flanders. He died suddenly, June 5, 1316, and was succeeded by his brother Philip V.

**Louis XI** (1423-83). King of France, 1461-83. The son of Charles VII, he was born at Bourges, July 23, 1423. The story of his reign is that of the consolidation of modern France. His democratic leanings, real or assumed, were to some extent responsible for raising the status of the lower and middle

classes, from whom he chose his most trusted counsellors, while jealously curbing the power of the nobility. Coarse in his pleasures and choice of associates, cruel and sensual, he was nevertheless a man of extraordinary subtlety, great administrative capacity, and of the highest personal courage.

Louis, who had embittered the last years of his father's life by his continual intrigues, succeeded him in 1461. Pitiless taxation brought about a general revolt in 1465, which resulted in the remission of certain burdens. Louis was made prisoner by his powerful rival, Duke Charles of Burgundy, while on a visit to that ruler in 1468, and only escaped execution by dint of many promises. Treachery on both sides brought the hostilities which ensued to a speedy close. In 1473 coercive measures of the most infamous kind were taken against the nobility, who had proposed to assign the crown to Edward IV of England. Edward landed in France with a large army, but was bought off, and Louis's cajolery rendered the invasion nugatory. Louis died at Plessis-le-Tours, Aug. 30, 1483.

*Bibliography.* *Memoires*, P. de Comines, 1649; *Lettres*, J. Vaesen and E. Charavay, 1883; F. Pasquier, 1895; *Life*, C. Hare, 1907.

**Louis XII** (1462-1515). King of France, 1498-1515. A son of Charles, duke of Orleans, the poet, he was descended from Charles V, but did not become heir to the throne for some years. He married Jeanne, a daughter of Louis XI, and as duke of Orleans was an active personage during the reigns of that king and of Charles VIII. Under the latter he led a revolt which resulted in his imprisonment, but he was soon free, and in 1494 he served with the French forces in Italy. In April, 1498, he became king on the failure of direct heirs to Charles VIII.

Asserting his right as heir to the Two Sicilies and as grandson of Valentina Visconti to Milan, Louis invaded Italy in 1499 with Ferdinand of Spain, a project which led to a prolonged rivalry between France and Spain. He secured the adherence of a province of doubtful loyalty by his marriage with Anne of Brittany, the widow of his predecessor, divorcing his first wife for this purpose. In 1508 he entered with Pope Julius II, the emperor, and Ferdinand into the league of Cambrai, the purpose of which was to quell the growing power of Venice, but once its pretensions had been checked, he drifted into hostilities with Julius and by the great victory of Ravenna in 1512 subjugated practically the whole of

Italy, which, however, he was unable to retain. A quarrel with Henry VIII of England led to the defeat of the French at Guinegate, near Calais, in 1513, and the ensuing treaty of Orleans was disadvantageous to France.

Louis took, as his third wife, Mary, sister of Henry VIII, but survived the wedding by only three months, dying Jan. 1, 1515. In 1506 he had received by public acclamation the title of father of his people, proof that, despite his many military misfortunes and unwise foreign policy, he was appreciated by his subjects for the many political advantages he had conferred upon them. *Consult* Louis XII et Anne de Bretagne, P. Lacroix, 1882; *Histoire de Louis XII*, A. R. de Maulde, 1889-93.

**Louis XIII** (1601-43). King of France, 1610-43. The son of Henry IV and Mary de' Medici, he was born Sept. 27, 1601, and came to the throne on the death of his father in 1610. A spoilt child, he received the worst possible guidance from his mother, and from the first was plunged in an atmosphere of court intrigue, to which his weak character was never able to rise superior.

The absence of settled government and the menace of the Protestant party centred at La Rochelle precipitated civil war in 1619, and after a conflict of two years, in which the king, the great nobles, and the queen dowager opposed each other in ever-varying combinations, the rise of Richelieu introduced stability into affairs. He reduced La Rochelle in 1628, and succeeded in gaining absolute influence over the weak Louis, who, though courageous as a military leader, was no match for the astute churchman in diplomatic affairs. The establishment of a central power uncontrolled by nobles or parliament was achieved, and by the efforts of the cardinal the French crown became more powerful than at any former period.

This elevation awoke an inordinate pride in Louis, who became dead to all natural feelings and acquiesced in the insults which Richelieu directed at his mother, brother, and queen, the unfortunate Anne of Austria. He died May 14, 1643, leaving a reputation for personal courage, combined with a weak understanding. He left two sons, Louis XIV and Philip, duke of Orleans.

*Bibliography.* *Louis XIII et Richelieu*, M. Topin, 1876. *Histoire de Richelieu*, G. Hanotaux, 1893-1903; *Louis XIII d'après sa correspondance avec Richelieu*, R. de Beauchamp, 1902; *Court of Louis XIII*, K. A. Patmore, 1909.



**Louis XIV** (1638-1715). King of France, 1643-1715. A son of Louis XIII and Anne of Austria, he was born at St. Germain-en-Laye Sept. 5, 1638. He became king before he was five, and was educated for that position. In 1660 he really began to rule, in the same year marrying Maria Theresa, a Spanish princess.

Louis reigned for 72 years, one of the most glorious periods in the history of France. For much of it her armies were invincible, but it was more notable for its art and literature, while the influence of the court on manners and taste can hardly be exaggerated. Of all the national activities, Louis was the centre. His industry was tremendous and he spoke truly when he said "the state, it is I." His hand was in almost every move of European politics, planning aggressions, arranging campaigns, buying alliances; he attended personally to all, and also found time to build palaces, to encourage literature and art, and to take a fill of pleasure.

Louis carried on a series of wars, the main object of which was to make him the dictator of Europe. By 1678 he had achieved a great measure of success, but afterwards he was less fortunate, and the treaty of Utrecht (1713) was a deep humiliation to France. He did, however, extend his country's boundaries, while for fifty years he was the most influential figure in European politics. After the death of Maria Theresa in 1683, Louis married his mistress, Mme. de Maintenon, who had great influence, and is regarded as being responsible for the interest in religion, or perhaps rather in orthodoxy, that marked his concluding years. His earlier mistresses included Mme. de la Vallière and Mme. de Montespan. His son Louis, and his grandson, the duke of Burgundy, died before him, leaving his great-grandson, afterwards Louis XV, his heir. Natural children included two sons by Mme. de Montespan, who were legitimatised. Louis died Sept. 1, 1715.

As a man Louis did not possess exceptional abilities of any kind, but he was certainly great

as a king. He impressed himself upon his age as no modern sovereign has ever done, and stands out as the ruler who more than any other typifies kingship. Although his colossal vanity was accompanied by a good deal of practical sense, his extravagance and selfishness cost France dear. In the sun king, the grand monarch—as he called himself—are seen both the best and the worst of absolute monarchy.

*Bibliography.* Siècle de Louis XIV, Voltaire, 1751; *Memoirs of Saint Simon*, Eng. trans., 1899; Louis XIV, A. Hassall, 1895; *Histoire de France*, vols. 7-8, ed. E. Lavisse, 1901; *The Age of Louis XIV*, Lord Acton, 1902; Louis XIV, Sir C. Petrie, new ed. 1940.

**Louis XV** (1710-74). King of France, 1715-74, Son of Louis, duke of Burgundy, he was the great-grandson of Louis XIV, to whose throne he became heir in 1712. Born Feb. 15, 1710, his mother being a princess of Savoy, he was educated under the direction of Fleury. At five he became king and in 1723 was declared of age, but the conduct of affairs was not in his hands until 1743, and then only partially.

His long reign was one of misfortune for France. The Seven Years' War ended in a humiliating peace, while the financial condition of the country grew steadily worse, and without ability or industry Louis did nothing to avert the approaching cataclysm. His private life is generally regarded as more than usually scandalous. He had a succession of mistresses, of whom Mme. de Pompadour and Mme. du Barry are best known, while stories are told of his seraglio in the Parc aux Cerfs. He married in 1725 Marie Lezczynska, daughter of Stanislaus, the deposed king of Poland. Undeservedly, he won the

title of Louis the Well-beloved because, during an illness in 1744, a good deal of anxiety was shown for his recovery. This feeling was not in evidence when he died, May 10, 1774, to be succeeded by his grandson, Louis XVI. The saying attributed to Louis, "After me the deluge," characterises the man and the age. *Consult* The Real Louis XV, A. C. P. Haggard, 1906. Louis XV and His Times, P. Gaxotte, 1934.

**Louis XVI** (1754-93). King of France, 1774-92. Born at Versailles Aug. 23, 1754, the son of Louis, the dauphin, and a grandson of Louis XV, he became heir to the throne in 1765 and at 19 became king. For 15 years he ruled, while the condition of the country grew steadily worse, and then, in 1789, came the Revolution. He remained on the throne for a further three years, although his power sank to zero. In June, 1791, he fled to Varennes, but he was brought back to Paris, where he took an oath to reign as a constitutional king. In Sept., 1792, the kingly office was abolished.

Louis Capet, as he was called, was without any justification tried, found guilty of treason against the republic, and on Jan. 21, 1793, was guillotined; his wife, Marie Antoinette, a Hapsburg princess, whom he had married in 1770, shared his fate. Their elder son died before his parents; a son and a daughter remained—the titular Louis XVII, and Marie Thérèse, who survived the horrors to which she was submitted, and died in 1851. Louis XVI's intentions were good, and his personal character formed a pleasing contrast to that of his grandfather, but he lacked entirely political insight and judgement. *Consult* Louis XVI and Marie Antoinette, A. C. P. Haggard, 1909.

**Louis XVII** (1785-95). Nominal king of France, 1793-95. The second son of Louis XVI, he was born at Versailles, March 27, 1785. In 1789, on his elder brother's death, he became heir to the throne which he never ascended. In Aug., 1792, he was taken to the Temple, and from then onwards the boy's history is



Louis, kings of France. Left to right, Louis XI, 1461-83; Louis XII, 1498-1515; Louis XIII, 1610-43; Louis XIV, 1643-1715; Louis XV, 1715-74; Louis XVI, 1774-92; Louis XVII, titular king, 1793-95; Louis XVIII, reigned de facto, 1814-24

largely conjecture. He became nominally king on the execution of his father, Jan. 21, 1793, but he remained in the Temple, and in June, 1795, his death was announced. Some think, however, that he escaped, and after the restoration of the Bourbons a number of persons claimed to be he. *Consult* The Dauphin, G. Lenôtre, Eng. trans. 1922; The Shadow-King, H. R. Madol, Eng. trans. 1930.

**Louis XVIII** (1755–1824). King of France. Grandson of Louis XV and brother of Louis XVI, he was born at Versailles, Nov.

*Louis* 17, 1755. Extremely jealous of Marie Antoinette, Monsieur, as he was styled, was involved in all the court intrigues, and at the first murmuring of the Revolution posed as a friend of the people. He remained in Paris until the flight of Louis XVI, when, more fortunate than his brother, he succeeded in making his way to Coblenz. Here he figured as the head of the Royalists, declared himself regent after the execution of Louis, and on the death of the dauphin, in 1795, proclaimed himself king as Louis XVIII. The next 12 years he spent wandering about Europe, welcomed nowhere, and reduced at times to extreme poverty.

In 1807 Louis went to England, where he remained until the victory of the Allied armies in 1814 opened the way to Paris. He entered his capital May 2, but after some months of unsatisfactory government, was obliged to take flight on Napoleon's escape from Elba. Once again, after Waterloo, he returned to Paris, July 8, 1815, to reign until his death. Crippled with gout and enfeebled by his life of disappointments and wanderings, he passed from the hands of one favourite to another and failed to establish his government on a firm basis by the granting of such constitutional reforms as the age demanded. He died Sept. 16, 1824, and, his marriage having been barren, the throne passed to his brother, Charles X. *See* Louis XVIII, M. F. Sanders, 1910.

**Louis I** (1786–1888). King of Bavaria. A son of Maximilian Joseph, who became in 1799 elector and in 1806 king of Bavaria, he was born at Strasbourg, Aug. 25, 1786. Politically hostile to France and a sympathiser with liberal ideas, he showed this latter trait after 1825, when he became king, and the earlier years of his reign formed a period of enlightened progress in politics, in education and culture, and in industry. He also sym-

pathised with the desire of Greece for independence.

Louis became less liberal in his ideas as years went on, or allowed his advisers to make him so. In



Louis, kings of Bavaria. Left to right, Louis I, Louis II, and Louis III

1846 he formed a connexion with the dancer Lola Montez, who used her influence especially against the dominant Catholic party. This was followed by the unrest of 1848, and the king's abdication on March 20. Louis lived on, partly in Rome, until Feb. 28, 1868. He had four sons, one of whom was Otto, king of Greece, and another his successor, Maximilian II. Munich owed to him its finest buildings and its great art collections.

**Louis II** (1845–86). King of Bavaria. The eldest son of King Maximilian II, he was born Aug. 25, 1845. His interests were in art and music rather than affairs of state, of which he was quite ignorant when he became king in 1864. His ministers committed Bavaria to the side of Austria in 1866 and to that of Prussia in 1870. He became friendly with Richard Wagner, to carry out whose expensive ideas he provided immense sums, a course that made both very unpopular with the Bavarians. He had other favourites, and soon developed symptoms of mental derangement, one symptom of which was a desire for solitude. To gratify this whim great sums were spent on residences at Hohenschwangau and elsewhere, on the performance of plays with himself as the only spectator, and on other eccentricities. In June, 1886, he was declared incapable of ruling. His uncle Luitpold became regent on June 10, and on June 13 the king and his doctor were drowned in the lake of Starnberg. *Consult* Romance of Ludwig II; Life, F. M. Ofen, Eng. trans. 1937. F. Gerard, 1899.

**Louis III** (1845–1921). King of Bavaria. A son of Prince Luitpold, and grandson of King Louis I, he was born Jan. 7, 1845. In 1868 he married the archduchess Maria Theresa of Austria-Este-Modena. On the death of his father, Dec. 12, 1912, he succeeded him as regent of Bavaria, King Otto being insane. Proclaimed king Nov. 5, 1913,

he abdicated Nov. 9, 1918, and died, Oct. 17, 1921. *See* Bavaria.

**Louis I** (1326–82). King of Hungary and Poland. A son of Charles Robert, king of Hungary, he became king in 1342. His reign was one of warfare, in which he was usually successful; this and his dealings with other kings in the interests of his country won

for him the title of the Great. He fought Venice for the possession of Dalmatia, which was given to him in 1358, and a further war (1378–81) confirmed his possession thereof. He was less successful, however, in his efforts to secure Naples. In 1370 he succeeded his uncle Casimir as king of Poland, and about the same time was involved in a war with Turkey. He died Sept. 10, 1382, leaving two daughters, of whom one was to have Hungary and the other Poland. *See* Hungary; Poland.

**Louis II** (1506–26). King of Hungary and Bohemia. The son of Ladislas, king of Bohemia, who had been chosen king of Hungary in 1490, he succeeded his father in March, 1516. As he grew up he cared only for pleasures, and was incapable of governing his



Louis II, King of Hungary

two troubled kingdoms. The Turks steadily advanced against Hungary, and Louis could obtain no aid from foreign powers, except from the emperor Charles V, whose troops, however, arrived too late. The loyalty of John Zapolya being suspected, the young king assumed the command of his little army, which was utterly overthrown by the sultan Solymán at Mohacs, Aug. 29, 1526. Louis was drowned while taking flight. The royal house of Hungary and Bohemia being extinct, the vacant thrones were conferred on Ferdinand of Hapsburg. *See* Ferdinand I; Mohacs.

**Louis** (c. 804–876). King of the Franks, called the German. A younger son of the emperor Louis I, and a grandson of Charlemagne, he received Bavaria and the lands E. of it in 817, and in 825 he began to rule this kingdom, his capital being Ratisbon. He was also occupied in



the constant quarrels in the royal family, which came to a head when the old emperor died in 840. War broke out, the result being the important treaty of Verdun (843), by which the empire was divided among Louis and his two brothers. In 869 Louis and his half-brother, Charles the Bald, agreed to divide the lands of their dead nephew, Lothair. Louis died Aug. 28, 876.

**Louis** (893-911). German king, called the Child. Through his father, Arnulf, he was descended from Charlemagne, of whose house he was the last representative in Germany. He was only a child on Arnulf's death in 899, and the government of Germany was placed in the hands of Otto, duke of Saxony, and Hatto, archbishop of Mainz. He died Sept. 24, 911.

**Louis, COUNT OF NASSAU** (1538-74). Dutch soldier. Born Jan. 10, 1538, at Dillenburg, he was a



Louis of Nassau,  
Dutch soldier

younger brother of William the Silent, prince of Orange (*q.v.*). He became the head of the party known as the Gueux, or Beggars. Retiring to Germany, he was

summoned to appear before the Council of Blood, but replied by entering the Netherlands with an armed force. Defeated at Jemmingen, he withdrew to Germany, and raised a force to aid the Huguenots in France. After sharing in the defeat at Moncontour in 1569, Louis surprised Mons, and on its recapture again went to Germany. He invaded the Netherlands, but was defeated and slain, with his brother Henry, on the heath of Mook, April 14, 1574.

**Louis, JOE** (b. 1914). American boxer. Joseph Louis Barrow was born near Lexington, Ala., May 13, 1914. Entering the championship ring in 1934, this negro made over two million dollars from 57 contests up to 1942, of which with his tremendous punch he won 49 by knock-out and seven on points. The only opponent to beat him was Max Schmeling, June 19, 1936. Louis became the youngest world heavyweight champion by beating J. J. Braddock, June 22, 1937,



Joe Louis,  
American boxer

and met over 20 challengers for his title including Schmeling, the Welshman Tommy Farr, and Max Baer. Louis, nicknamed the "brown bomber" and renowned for his clean fighting, retired undefeated in 1949.

**Louisa.** Christian name, the feminine of Louis. The form Louise is frequent in England and France. Louisa Dorothea (1710-67), wife of Frederick II, duke of Saxe-Gotha, made her court a centre of culture. Louisa Ulrika (1721-82), a sister of Frederick the Great, married Adolphus Frederick, king of Sweden. She founded an academy at Stockholm. Louise of Savoy (1476-1531), the mother of Francis I of France, took a leading part in the politics of her time.

**Louisburg.** Town and port of Cape Breton, Nova Scotia, Canada. It is 25 m. S.E. of Sydney, on the Sydney-Louisburg rly. Standing on a fine harbour, it has important fisheries. Pop. 1,012.

The interest of Louisburg is mainly historical. On the opposite side of the harbour stood the greatest French fortress in the New World. By the treaty of Utrecht, France gave up Nova Scotia, but retained Cape Breton and certain fishing rights. On Cape Breton the French built a strong fortress which they called Louisburg. In 1745 the colonists in the New England states, having suffered much from French competition in the fisheries, sent an expedition against it. The home government

aided with a fleet, and in March, 1745, the siege began. The fortress held out until June 27. It was kept by the British until 1748, when it was restored to France by the treaty of Aix-la-Chapelle. In 1758 it was again attacked by a force of 12,000 under Amherst, and a fleet under Boscawen, which assembled at Halifax, and the men landed, Wolfe taking a prominent part in this operation. After the French fleet had been destroyed, the place surrendered. The old fortifications, dismantled at the surrender, now form part of the Louisburg natural historic park.

**Louise** (1848-1939). British princess, known also as the duchess of Argyll. The sixth child

and fourth daughter of Queen Victoria and Prince Albert, she was born March 18, 1845, and baptized Louise Caroline Alberta. She was educated privately, and on March 21, 1871, was married to the marquess of Lorne, afterwards 9th duke of Argyll.



Princess Louise,  
Duchess of Argyll

She accompanied him to Canada when he was governor-general. The princess, who had no children, was left a widow in 1914, and devoted herself to charitable pursuits. She died Dec. 3, 1939.

**Louise** (Ger. *Luise*) (1776-1810). Queen of Prussia. Daughter of Duke Charles of Mecklenburg-Strelitz, she was born at Hanover, March 10, 1776, and on Dec. 24, 1793, married the crown prince of Prussia, who in 1797 became King Frederick William III (*q.v.*). Her high character and spirit endeared her to the Prussians, especially when, in 1807, she visited Napoleon at Tilsit and vainly tried to induce him to



Louisburg, Nova Scotia. View of the harbour from the ruins of the old French fortress

mitigate the terms imposed on Prussia. She died July 19, 1810, and was commemorated by the Louise foundation for educating girls and the Order of Louise.

**Louisiade.** Archipelago, or group of islands, off the S.E. extremity of New Guinea. Included in the Australian Commonwealth Territory of Papua (*q.v.*), the largest are Tagula, Rossel, St. Aignan, Joannet, and Pig. There are numerous small islets, or atolls, and reefs included in the archipelago. The largest islands are mountainous, having peaks rising from 2,800 ft. to 3,400 ft. The islets are low and mostly of coral formation. Gold is found on some of the larger islands, which are

inhabited mostly by Papuan and Melanesian savages. Discovered by Torres in 1606, they were occupied by the British in 1888, and taken over by Australia in 1901.

In March, 1942, the Japanese occupied the is., which gave them command of the N. entry into the Coral Sea, and established airfields. Australians recaptured the is., May, 1944.

**Louisiana.** Former French province in N. America, much larger than the present state. La Salle sailed down the Mississippi, and took possession of the region in the name of Louis XIV, in whose honour he named it Louisiana, April 9, 1682. It extended nominally from the British colonies in the E. to those of Spain in the W., and from the present Manitoba and the Great Lakes, to the Gulf of Mexico. The Rocky Mts. were regarded as dividing it from Spanish territory, except that Texas was not claimed by France. An unsuccessful proprietary colony under Antoine Crozat during 1712-17, Louisiana was granted to John Law's Mississippi Company. The new scheme failed through wild speculation, and in 1732 the province reverted to the crown.

On the loss of Canada, the left bank of the Mississippi, except New Orleans, was ceded to Great Britain by the peace of Paris, 1763, the remainder passing to Spain, which did little to develop the country. Talleyrand urged Spain to realize the necessity of a strong barrier between the U.S.A. and Mexico, and on Oct. 1, 1800, by the secret treaty of St. Ildefonso, Louisiana was restored to France. In May, 1803, France sold the province to the U.S.A. for £3,000,000. More than 1,100,000 sq. m. were transferred. The coast region of W. Florida to the Perdido river was claimed as part of Louisiana, but remained Spanish till 1819.

**Louisiana.** S. central state of the U.S.A. It has an area of 48,523 sq. m., and a well indented coastline of 1,700 m. It is situated on the Gulf of Mexico at the mouth of the R. Mississippi. The coast region is swampy and subject to inundation; the N. and N.E. portions of the state are upland, whence the surface gradually slopes away to the S. The state contains immense forests of pine, cypress, oak, etc. It is the main source of cane sugar in the continental U.S., and is the leading rice producer. Vegetables and fruit are also widely grown.

Louisiana has a thriving fishing industry, sulphur and salt mines and petroleum wells and refineries, and manufactures associated with the products of the land. With 4,794 m. of navigable waterways—more than any other state—Louisiana has also 4,276 m. of rlys. There are a state and other universities, and an agricultural and other colleges. Baton Rouge is the capital, but New Orleans is the largest city. Pop. 2,363,880, of whom 849,303 are negroes. Louisiana is unique among the states for the strong French element. Many of the inhabitants are descendants of French royalists who sought asylum during the Revolution. It became part of the U.S.A. in 1803 when it was purchased, and was admitted to the union in 1812. It sends two senators and eight representatives to Congress.

**Louisiana.** A city of Missouri, U.S.A., in Pike co. On the Mississippi river, 93 m. N. by W. of St. Louis, it is served by rlys. Among its industries are nursery gardening, stone quarrying, flour milling, and the manufacture of boots and shoes, lumber products, tools, tobacco, cigars, and carriages. It also carries on trade in cattle, fruit, and agricultural produce. Founded in 1818, Louisiana was incorporated in 1845 and became a city four years later. Pop. 4,669.

**Louis Philippe** (1773-1850). King of the French, 1830-48. Eldest son of Louis Philippe, duke



*Louis Philippe*

of Orleans, known as Philippe Égalité, he was born Oct. 6, 1773. Like his father, he professed revolutionary principles, repudiated his titles, and became a colonel of dragoons in the revolutionary army, fighting at Valmy and Jemappes. After his father's execution he became head of the Orleans branch of the Bourbons, which was descended from a son of Louis XIII. The government having ordered his arrest, he fled with Dumouriez to Switzerland, and spent many years wandering about Europe. At the court of Palermo, in 1809, he married a daughter of Ferdinand, king of the Two Sicilies. Reinstated in 1814, he was driven from France by the hostility of Louis XVIII, and lived at Twickenham until 1827.

His opportunity came with the revolution of 1830, when Charles X and his family were expelled. The bourgeois constitutionalists, who had made the revolution, invited Louis Philippe to the throne. He accepted as a citizen king, the chosen of the people. His precarious task was to steer a middle course between democracy and privilege, to guard material interests, and to maintain peace. For the first few years of his reign, and again in 1840, France was on the verge of revolution. The king opposed the rising tide of republicanism and socialism by maintaining a limited franchise, muzzling the press, curtailing the jury system, and by bribery.

A close entente with England soon turned into covert hostility, largely as a result of the spirited foreign policy of Palmerston. Studiously avoiding foreign complications, the government seemed to the ardent idealists who carried on the Napoleonic tradition to be compromising the national honour. The support given to Belgium, and the conquest of Algeria, in which two of the king's sons played a part, failed to make the constitutional monarchy popular, while the intervention in Spanish affairs caused scandal abroad. The dismissal of Guizot came too late to avert the revolution of Feb., 1848. Louis Philippe fled to England, and died at Claremont, Surrey, Aug. 26, 1850. His eldest son, Louis, duke of Orleans, had died in 1842, leaving a son, the count of Paris. *Consult* Public and Private Life, L. G. Michaud, Eng. trans. 1851.

**Louis Style.** Term applied to four styles of French furniture, and named after Louis XIII, XIV, XV, and XVI. The Louis Treize (XIII) was a reaction against the Henri Quatre, with its riot of pilaster, entablatures, contorted cornices, and superabundance of carving and painting. Louis Treize chairs were small, rectangular in contour, with slight wood frames concealed by well-padded velvets, tapestries, and embroideries, fastened by round-headed brass nails. Arms were rarely padded; the legs were joined by stretchers. Armoires, chests, and desks were embellished by inlay of coloured woods, ivory, and bone, depicting flowers and birds. Walls were panelled and adorned with large mirrors.

Louis Quatorze (XIV) was a heavy classic style, but florid; the furniture being overloaded with carvings, rich inlays (such as those of Boulle), and heavy, carved



metal mountings. Chairs had tall backs, square or V-shaped; sofas were ample in size, and rich brocades and tapestries of florid design were used. Cabinets were large, glazed, and often bowed.

Louis Quinze (XV) is the florid rococo style. Wood was heavily carved, or covered with composition, moulded into enrichments of shells, rocks, waterfalls, and scrollwork, among which were doves, cupids, heads, and busts of women terminating in foliage. Most of this was gilded, or painted in delicate tints. Couches and chairs had sweeping, curved backs, upholstered in tapestries with flowers, figures, and animals, or flowered brocades, the woodwork gilded. Cabinets were replaced by bow-shaped commodes and *bonheurs-du-jour*, little cabinets on tables, like low-boys. There were also corner cabinets and little round tables (*guéridons*) enriched by inlays of birds, figures, and landscapes, carried out in natural tinted and stained woods.

Louis Seize (XVI) is a more chaste version of the Renaissance, presenting rectangular panels with simple mouldings, fluted columns, with quill and husk fillings. Dainty ribbons and bows in marqueterie or ormolu surrounded richly painted Sèvres plaques, while silver was introduced to tone down the gilding. Red and green were the predominating colours. Tapestry of Beauvais and the Gobelins and silks were used for upholstery. Chair backs were rectangular or oval; the legs tapered, fluted, and connected by stretchers. See Chair; Furniture.

**Louisville.** City of Kentucky, U.S.A., the co. seat of Jefferson co. Situated 90 m. S.W. of Cincinnati, 130 m. by river and 110 m. by rail from that city, on the Illinois Central and other rlys., it is a river port on the lower Ohio, here obstructed by rapids, which provide hydro-electric power. The

city has a river front of 7 m., and is a great rly. junction with three rly. bridges. The oldest municipal university in the U.S.A., it is the chief of a large number of educational institutions, and among the U.S. government institutions are the only coastguard

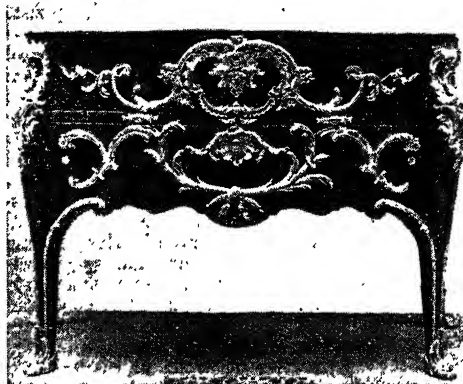
**Loulé.** Town of Portugal, in the prov. of Faro. It stands on a mountain slope 201 m. by rly. S.S.E. of Lisbon and 10 m. N.N.W. of Faro, and is encompassed by ruined Moorish walls, with a citadel overlooking the little stream of Loulé. It manufactures porcelain, leather goods, and articles made from the palm, agave, and esparto grass. Pop. 23,700.

**Louny.** Town and dist. in the Bohemian portion of Czecho-Slovakia. Situated on the river Cheb, 64 m. by rly. N.E. of Prague, it has

iron and sugar refining industries.

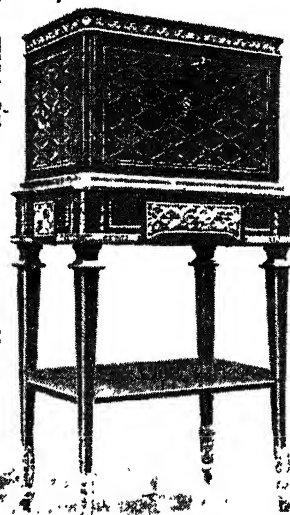
### Louping Ill.

Disease of sheep. A form of chorea or paralysis, it is known in some districts as trembling. It appears to be due to a germ which the animals pick up when feeding. There is no cure for the disease, which is at its worst in spring and autumn, and an animal once infected dies.



institution in the interior, a federal reserve bank, a marine hospital, and a fish hatchery. At Fort Knox, 33 m. to S.W., the U.S. gold reserve is stored (see Knox, Fort). Cherokee and Iroquois are the largest of many parks. A great trading and manufacturing centre, the city is a market for leaf tobacco, and its manufactures include tobacco and cigarettes, Bourbon whisky, processed meat, machinery, leather, and timber goods. Incorporated as a town in 1780, it became a city in 1828. Pop. 319,077 (metropolitan area, 434,408). The Kentucky Derby is held here in May.

**Loulan.** Ancient town and kingdom in Chinese Turkistan (now Sinkiang prov., China), also called Shanshan. Situate on the caravan route between China and the Roman Orient, the region embraced the classical Issedon Serica. Destroyed by desert encroachment, Loulan was identified by Hedin in 1901 in the heart of the Lop desert. Stein's expeditions in 1907 and 1914 revealed human and cultural remains of primitive alpine round-heads, besides fine brocaded silks of the Han dynasty, 1st century B.C., and iron implements which had been used by immigrant traders of higher culture.



Louis Style. 1. Ebony commode in the shape of a marriage chest, with marquetry of metal in tortoiseshell, Louis XIV period. 2. Commode, with overlaid marquetry of mahogany, and heavily mounted with chased ormolu; probably by Caffieri, Louis XV period. 3. Jewel cabinet and stand, Louis XVI period.

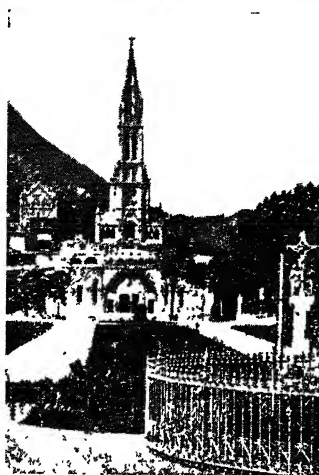
1. Wallace Collection, 2 and 3, Jones Bequest, 4 and A. Muscum

**Lourdes.** Town of France, in the dept. of Hautes-Pyrénées. It lies in hilly country on the Gave de Pau, 12 m. by rly. S.S.W. of Tarbes. Except for some local quarrying and agricultural trade, the town relies almost entirely on the constant stream of pilgrims to the grotto of Our Lady of Lourdes. The basilica, 1876, and the church of the Rosary, 1889, are close by the shrine, as also is the large Hospice de Notre Dame des Douleurs. The old château of Lourdes stands on an eminence overlooking the right bank of the river. The treaty of Brétigny, 1360, handed over Lourdes to the English, who retained it until 1406. Pop. 13,974.

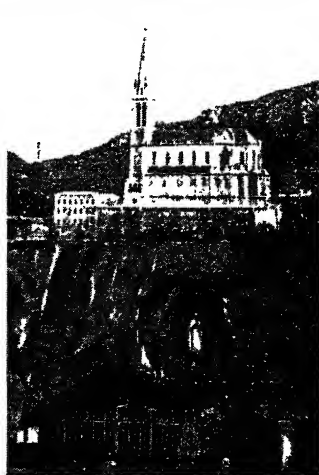
The famous pilgrimage arose from the alleged appearances of the Virgin Mary to a poor peasant girl named Bernadette Soubirous (1844-79) in 1858. The shrine, erected in the small grotto, where Bernadette saw the Virgin, and the healing spring close by, soon attracted large numbers of pilgrims seeking cures, and many apparently well-authenticated recoveries have been recorded. Pilgrimages are organized from all parts of France and from other countries, chiefly during the summer months, when the town is thronged with pilgrims, many of them cripples, and scenes of extraordinary excitement are witnessed. A conservative estimate of the number of pilgrims in a normal year is well over 500,000. The great novel by Émile Zola, entitled *Lourdes*, published 1894, is a rational account of happenings during a pilgrimage. See Bernadette.

**Lourenço Marques** or  **LORENZO MARQUES.** Seaport of Mozambique. Situated on the harbour of Delagoa Bay, one of the finest natural harbours in the world, the city is the terminus of the most direct rly. route to the Transvaal, from which it derives the bulk of its transport trade. It is a port of call for B.O.A.C., and for flying boats from Europe. The rly. station is considered the finest in S. Africa. A new road to Durban (425 m.) was opened 1934. There are a R.C. cathedral, Anglican and Methodist churches, a synagogue, a mosque and a Chinese temple, also a fine hospital, a botanic garden, and municipal bus services. Pop. 38,000.

**Louse** (plural lice). Name given to a group of small wingless insects, parasitic on birds and mammals. They form the order Anoplura (286 British species). Lice lay their eggs on the hair or feathers, and the mouth parts are



Lourdes, France. Left, the basilica, in front of which is the Chapel of the Rosary. Right, the miraculous grotto and basilica



developed into a hooked tube, with which they bore into the skin and suck the blood of their hosts. The eggs hatch out in a few days, and reproduce their species in about a fortnight. Hence the rate of reproduction is rapid. The biting-lice or bird-lice (*mallophaga*) live chiefly on birds. The true-lice or sucking-lice (*siphimculata*) are confined to mammals. The human louse (*Pediculus humanus*) exists in two races: the head louse (*capitis*) and the body louse (*corporis*). The last-named is the chief agent in the spread of epidemic typhus fever. Other lice-born diseases are a form of relapsing fever and trench fever.

**Lousewort** (*Pedicularis sylvatica*). Perennial herb of the family Scrophulariaceae, native of Europe. It has a short rootstock and branching leafy stems a few inches high. The narrow oblong leaves are deeply cut into segments from the sides. The tubular two-lipped flowers are rose-coloured. The name is due to an ancient

idea that the plant when eaten by sheep made them lousy. It is a parasite upon the roots of other plants. Another species, the marsh lousewort (*P. palustris*), which is an annual, grows in bogs.

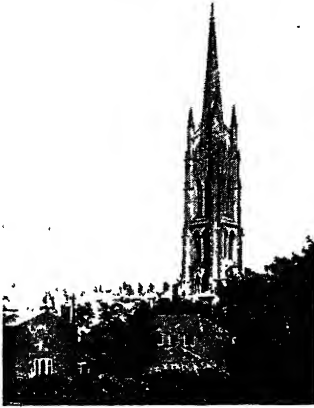
**Louth.** County of Eire, the smallest in the country. In the prov. of Leinster, it has an area of 317 sq. m. The coastline on the Irish Sea is broken by Carlingford Lough, Dundalk Bay, and the estuary of the Boyne. The chief rivers are the Fane, Lagan, Glyde, and Dee, while the Boyne flows along the S. boundary. The surface is flat, save in the N.E., where are the Carlingford Mts., and the S.W. Chief industries are agriculture, for which there is much fertile land, on which oats, barley, potatoes and flax are grown; and fishing, including the culture of oysters. The co.'s principal towns are Dundalk, the county town, Drogheda, and Ardee. Carlingford and Greenore are watering-places. Three members are elected to the Dáil.

Originally part of Orgial, or Argial, Louth became a county in the 13th century, being for many years part of Ulster. It has remains of several monasteries as well as some pre-Christian buildings, the most noted being at Monasterboice. Louth, from which the county takes its name, is a village 5½ m. from Dundalk. Once a flourishing place, known as Knockfergus, it had a monastery, of which there are some remains, said to have been founded by S. Patrick. Pop. 65,108.

**Louth.** Mun. bor. and market town of Lincolnshire, England. It stands on the Ludd, 26 m. N.E. of



Lousewort. Foliage and flower-head of this parasitic herb



Louth, Lincolnshire. Parish church of S. James

Lincoln, with a rly. station. A canal, dating from 1761-63, connects it with the Humber. The chief building is the large and beautiful church of S. James, a Perpendicular edifice, notable for its spire and rebuilt in the 15th cent. Louth is the trading centre for a large agricultural dist. and has works for making agricultural



Louth borough arms

implements, brewing and malting establishments. Alfred Tennyson and his brothers were educated at the grammar school. Near the town, at Louth Park, are the remains of a Cistercian abbey, founded about 1140.

With a market dating from Anglo-Saxon times, Louth was prosperous in the Middle Ages, when there was a trade in wool here. The town, incorporated in 1551, received a charter in 1834. It gives its name to a county constituency. On May 29, 1920, serious floods, after a cloudburst, did enormous damage. Market days, Wed. and Fri. Pop. 9,678.

**Louvain** (Flemish, *Leuven*). Town of Belgium, in the prov. of Brabant. It lies on the river Dyle, 19 m. by rly. E.N.E. of Brussels, and is an important rly junction. The town was surrounded by remains of old fortifications, later turned into promenades; outside this circle lay the manoeuvre ground, the 16th cent. château of Héverlé, and the Abbaye de Parc, a Premonstratensian house of note. The chief industries are brewing, lace making, printing, and tobacco manufacture. Pop. 36,311.

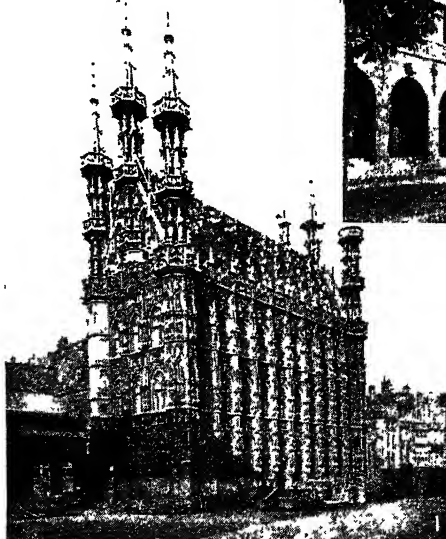
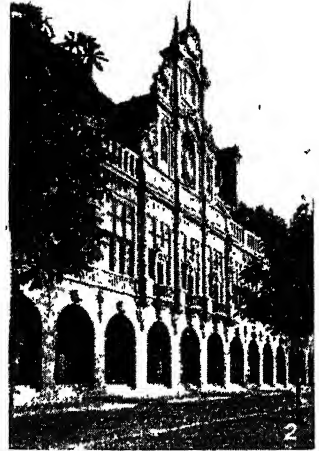
The hôtel de ville, one of Belgium's finest buildings, a late Gothic work begun in 1448-69, with a profusion of sculptured ornament, escaped damage during the destruction of Aug., 1914. The neighbouring church of S. Pierre, of the same period, was less fortunate. The famous university of Louvain is the intellectual centre of Belgian Catholicism, and has five faculties with various technical and agricultural schools affiliated. Founded in 1426, it was counted the leading university of Europe in the 16th century. Suppressed by the French, 1797, and secularised by the Dutch, 1817, it was revived as a R.C. institution 1834.

Louvain itself dates from 891, was capital of the dukes of Brabant, and one of the wealthy cloth centres of the Low Countries in medieval times, when its pop. numbered about 120,000. Its decay began with the ruthless suppression, by Duke Wencelas in 1382, of a townsmen's revolt, which led to the migration of many weavers.

In the First Great War, German troops entered Louvain, Aug. 19, 1914. A week later, on the pretext that Belgian civilians had shot at German soldiers, they began an orgy of massacre and terrorism. Whole streets of houses were set on fire and the inhabitants shot down as they tried to escape. Townsfolk were deported to German prisons, some being forced to march until they dropped, when they were mercilessly shot or

bayoneted. The town was methodically sacked and burned from Aug. 27 until Sept. 2; many of its public buildings were destroyed, including the church of S. Pierre and the university library, with its priceless treasures. Cardinal Mercier stated that 176 persons had been shot or burned to death. That this outbreak of barbarity was part of a deliberate plan to subdue the Belgian populace was shown by a letter found by the French in 1919, written by the Kaiser, William II, to the Austrian emperor.

When the Germans invaded Belgium in 1940, British forces which had come to the aid of the Belgian armies occupied a line on the river Dyle, having Louvain as its centre. The town was heavily shelled and bombed, and the university library, rebuilt with American help after the First Great War, was again destroyed. The Grenadier Guards put up a magnificent stand at Louvain, but the Germans took the town on May 17, the Guards retiring on Furnes. On Sept. 4, 1944, British troops occupied Louvain



Louvain, Belgium. 1. Fifteenth cent. town hall. 2. The university library which replaced the historic building sacked in Aug., 1914, and was itself destroyed in May, 1940

against negligible resistance, strategically valuable bridges across the Dyle being secured undamaged with the help of members of the Belgian resistance movement.

**Louviers**. Town of France. In the dept. of Eure, it is the chief town of an arrondissement. It lies on the river Eure, 16 m. by rly. S.S.E. of Rouen, and is a railway

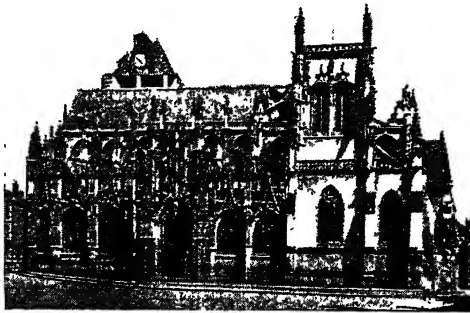


junction. It has busy cloth manufactures which date from medieval times, and some smaller industries, and is noteworthy for its Gothic church of Notre Dame, with a fine S. portal of the 15th century.

**Louvois,** FRANÇOIS MICHEL LE TELLIER, MARQUIS OF (1641-91). French statesman.

Born in Paris, Jan. 18, 1641, the son of Michel le Tellier, he was trained for public life and soon attracted the attention of Louis XIV. In 1666 he became minister of war in succession to his father, and rapidly brought the French army to a high state of efficiency. This was proved when war broke out in 1672, and during the next 18 years Louvois was one of the directors of the policy of France, both military and civil. He succeeded Colbert as the king's chief adviser, but had lost some of his influence when he died suddenly, July 16, 1691.

**Louvre, THE.** Old palace of the kings of France, in Paris, now containing a great museum of art and antiquities. Situated on the right bank of the Seine, the building, with its courts, occupies an area of about 7 acres. It has been suggested that it was originally a meeting-place of wolf-hunters, whence the name (*louverie*, from *loup*, wolf). The first official mention of the Louvre by its name occurs in 1204, in the reign of Philip

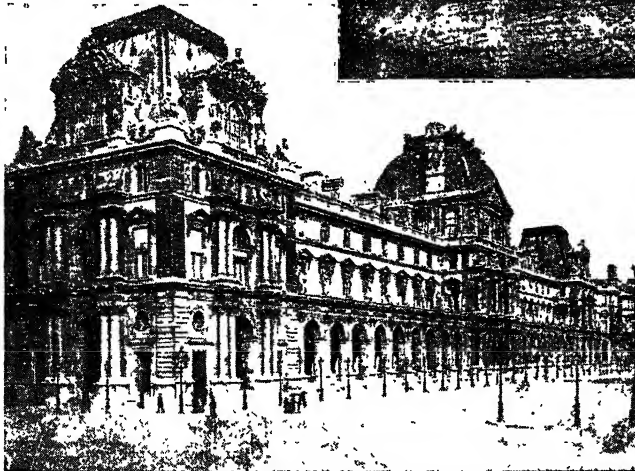


Louviers, France. Gothic church of Notre Dame

Augustus; but probably a fortified palace existed on the site two or three centuries earlier. While Philip Augustus may be considered as the originator of the Louvre, the monarch responsible for the beginnings of the present building was Francis I, before whose reign the palace had been abandoned as a royal residence for many years.

Francis, having pulled down the old tower and introduced modern improvements, afterwards reconstructed it on a new plan, first with the assistance of the Italian architect Serlio and afterwards with that of Pierre Lescot. The parts designed by Lescot rank among the masterpieces of Renaissance architecture. During the latter half of the 16th cent. numerous additions and improvements were made.

Meanwhile the adjacent palace of the Tuileries (*q.v.*) had been built, and Henry IV revived an old idea of connecting the Tuileries and the Louvre so as to form one great group of buildings. A long gallery had actually been begun in 1566 with this intention; the structure was completed about 1608. In 1624 notable alterations were made to the Louvre. Lemercier, instructed by Richelieu to prepare plans for the completion of the palace, pulled down the whole of the N. wing and built what is now



Louvre, Paris. North palace of the New Louvre, 1852-57, from the Place du Carrousel. Top, right, Apollo Gallery, decorated by Le Brun in 1661, and rebuilt 1845-51, with ceiling paintings by E. Delacroix

known as the *pavillon de l'horloge*. The magnificent Apollo Gallery dates from Louis XIV's reign. Some further important alterations were made by Perrault, and the building was still unfinished at the Revolution.

Napoleon put the finishing touches to the work of centuries and filled the galleries with a priceless collection of works of art obtained from foreign capitals. Although much of this loot was subsequently restored, the collection remains one of the finest in the world. Its sculpture includes the Winged Victory of Samothrace and the Venus of Milo, and among the galaxy of world-famous pictures here are Raphael's Holy Family, Leonardo's Virgin of the Rocks,

the Mona Lisa, and other Italian masterpieces, and an unrivalled collection of the French school.

The Salle Rubens, filled with the series of allegorical paintings executed for Catherine de' Medici; the Salle Van Dyck; the Salon Carré, which contains the greatest masterpieces of various schools; and the Grande Galerie are among the more famous of the Louvre's many galleries. During the Second Great War 800 of its treasures were hidden at Valency castle on the Loire. See Architecture; Art; Paris; consult The Art of the Louvre, M. K. Potter, 1905; Le Palais du Louvre, G. Geffroy, 1909.

**Louvre** or **LOUVER**. Term in architecture applied to a small turret raised above the aperture in the roof of a medieval hall (*q.v.*), to allow the smoke to escape and to prevent the rain from entering. The sides were often covered with overlapping boards with spaces between them. Hence boards or slips of glass arranged in this way are termed *louvre*s or *louvre-boards*. See Chimney; Lantern.

**Loveage** (*Ligusticum scoticum*). Perennial herb of the family Umbelliferae. It is a native of N.



Loveage. Foliage and flower spray. Inset, flower-head and single flower

Europe, N. Asia, and N. America. It has a stout branched rootstock and large, much divided leaves. The erect, grooved stem is two or three feet high, the branches bearing umbels of small white or pink flowers. The root is aromatic, and the leaves are used as a pot-herb.

**Lovat, BARON**. Scottish title borne by the family of Fraser with an interval since about 1458. Hugh Fraser, who was made a lord of parliament, took the title of Lord Lovat, or Lord Fraser of Lovat, this being the name of his seat in Inverness-shire. The title passed from one descendant to another, until it came to Simon Lovat (*v.i.*), the Jacobite. When he was executed in 1747 his titles and estates

were forfeited, but the estates were restored to his son Simon, who raised the Fraser Highlanders. His direct heirs became extinct in 1815. In 1837, a kinsman, Thomas Alexander Fraser, a descendant of the 2nd baron, was created Baron Lovat.

His descendant, Simon Joseph (1871-1933), became the 16th baron. He raised Lovat's Scouts, commanded them in the S. African War, and on his return raised two yeomanry regiments which formed part of the Highland Mounted Brigade. In the First Great



16th Baron Lovat, British soldier Russell

War he served in Gallipoli, France, and Flanders, later devoting himself to the forestry corps. He was parliamentary under-secretary for the dominions, 1927-28, and chairman of the Oversea Settlement League. On his death, Feb. 18, 1933, the title passed to his son, Simon Christopher Joseph Fraser (b. July 9, 1911), 17th Baron. He served in Commandos in the Second Great War, won the D.S.O., and reached the rank of brigadier. He was under-secretary of state for Foreign Affairs in the Churchill "caretaker" govt., May-July, 1945. Lord Lovat's seat is Beaufort Castle, Beaulieu, Inverness-shire. *Pron. Luvvut. See Fraser.*

**Lovat, SIMON FRASER, 12TH BARON** (c. 1667-1747). Scottish Jacobite. Son of Thomas Fraser, of Beaufort, and grandson of the 7th baron, he was educated at Aberdeen. He was a strange mixture of a barbarous chieftain and an accomplished gentleman. Disappointed in an arrangement to marry his cousin, an heiress, he planned to seize her by force, but captured her widowed mother instead, and compelled her to marry him in 1696. This outrage brought such vigorous punitive measures down upon him that in 1698 he was found guilty of high treason and sentenced to death. For some years he was a fugitive in the northern Highlands, succeeding to the title in 1699.

In 1701 he secured a pardon from William III for his political offences, but, failing to obey a summons to appear before the high court to answer for his outrage on the dowager Lady Lovat, he was declared an outlaw. His subsequent career is one continuous story of intrigue and treachery, a considerable part of his time being spent in French, Scottish, and English prisons. At one time he is said to have been a Jesuit preacher. He forsook the Jacobite cause in 1715, but turned to it again. Joining the Young Pretender in 1745, he was captured after Culloden and executed in London, April 9, 1747.

**Lovat's Scouts**. This British regiment, raised by the 16th Lord Lovat (*q.v.*), has been incorporated in the Scottish Horse (*q.v.*).

**Love**. Passionate or emotional sense of attraction felt by one person towards another, or in an extended sense towards an impersonal object. Based on a universal instinct, and therefore found among lower animals in a rudimentary state, notably in the forms of sexual and parental affection, love in man becomes a complex emotion, comprising moral and spiritual elements, tending to become disinterested or to identify the happiness of the lover with that of the loved. The awakening of sexual love is normally accompanied by a great widening of sympathy and of the emotional and intellectual horizon. Through Christianity and the European conception of chivalry the ideal of sexual love has been clarified and raised to a higher level than in antiquity or in the East today. The age of the troubadours, though not without its extravagances, marked an advance. Dante's Vita Nuova is the classic of medieval love. As expressions of modern feeling may be mentioned the poetry of Shelley, especially Epipsychidion, E. B. Browning's Sonnets from the Portuguese, D. G. Rossetti's House of Life, Meredith's Modern Love, and much of Yeats.

The conception of love has a prominent place in many religious and philosophic systems. Empedocles found the two fundamental forces of the universe in love and strife—the principles of attraction and repulsion. To Plato, in the Symposium and elsewhere, *eros* or passionate, sensuous love is at once a shadow of and a preparation for the love of the soul for the eternal ideas of the good and beautiful. Like seeks like, and



Simon Fraser, Lord Lovat  
Portrait by Hogarth, Nat. Port. Gallery



the soul, being itself an idea or immaterial substance, seeks union with ideal beauty. The thought of a loving relation between man and God was alien to classical antiquity, though found in various Eastern religions. Thus, in many forms of Hinduism salvation is sought in a passionate or ecstatic devotion to Krishna or Siva, a belief which, though often degraded, was expressed by some teachers in the loftiest language. Similar doctrines form a leading part of the mystical poetry of the Persian Sufis.

The Hebrew prophets, by developing the idea of mutual love, as of a husband and wife, between Jehovah and Israel, led up to Christianity. In the Wisdom literature the personified Thought of God loves those who love her (Prov. 8, v. 17). In the N.T. love is the fulfilling of the law, i.e. love to God and man is the one essential motive of right action. Its nature is described in 1 Cor. 13 by S. Paul, after whom in Christian ethics love ranks as the chief of the triad of virtues. Pantheistic thought adopts the idea of love as the mainspring of the universe, as in Shelley, while to Spinoza the highest function of the soul is the intellectual love of God, i.e. the enthusiastic conviction that one's own good is identical with the will of the world-soul.

**Love Bird.** Name popularly given to a small parrot of the genus *Agapornis*. The idea of mutual affection conveyed by the name is quite without foundation, the birds perching close together merely for the sake of warmth. Solitary love birds do not pine; and the fact that the death of one of a pair is sometimes followed by that of the other merely indicates that both were in ill-health. Their handsome appearance and pretty ways make them favourites for the aviary, but they are apt



Love Bird. Grey-headed variety of Madagascar

to prove delicate. The rosy-faced love bird is the hardest, and will often breed in captivity, if provided with a roomy and suitable aviary. There are about nine species of this genus of parrots, all natives of Africa and Madagascar. They fly in flocks, feed on berries and seeds, and have the habit of taking possession of the nests of other birds instead of building for themselves. See *Budgerigar*.

**Lovedale.** Mission station near Alice, Cape Province, S. Africa. It was founded in 1841 by the Free Church of Scotland, and was long under the care of Dr. James Stewart, to whom there is a monument on Sandili's Kop. The school gives technical and other instruction to about 700 pupils.

**Love Feast.** Alternative term for the common meal taken weekly by members of the early Christian Church (2 Peter 2; Jude 12). It is also called *Agapē* (q.v.).

**Love for Love.** Comedy by William Congreve (q.v.). It was first produced April 30, 1695, when Betterton took the part of Valentine Legend, and Mrs. Foresight and Mrs. Frail were played respectively by Mrs. Bracegirdle and by Mrs. Barry. With its scintillating wit and shrewd character-drawing, it is undoubtedly Congreve's masterpiece, and is by many critics considered the best English comedy of manners. Its coarseness, though sometimes obtrusive, is characteristic of its period. A bowdlerised version was produced in 1871 without arousing much enthusiasm. Later revivals in its original form include: Aldwych Theatre (Stage Society), 1917; Sadler's Wells, 1934; Phoenix and Haymarket Theatres (John Gielgud company), 1943-44.

**Love-in-a-Mist** (*Nigella damascena*). Annual herb of the family Ranunculaceae, a native of S. Europe. The alternate leaves are

divided into thread-like segments, and the large blue or white flowers are surrounded by the divided bracts—the "mist" of the name. It is also called devil-in-the-bush and fennel-flower. Another species (*N. hispanica*), also much grown in gardens, has deep blue flowers and crimson stamens, but lacks the "mist."

**Love-in-idleness.** Popular name for the pansy or heartsease. See *Pansy*.

**Lovelace, RICHARD** (1618-58). English cavalier and poet. Eldest son of Sir William Lovelace of Woolwich, who was killed in the Low Countries, he was educated at Charterhouse and Gloucester Hall, Oxford. For presenting to the Long Parliament the petition of Kentish royalists on behalf of Charles I, he was imprisoned in the Gatehouse, Westminster, where he wrote his *Stone Walls do not a Prison Make*, 1642. He took up arms for Charles in 1645, and fought for the French king against Spain, 1646. On his return to England he was again, 1648, cast in prison, at Petre House, Aldersgate, where he prepared for the press his *Lucasta: Epodes, Sonnets, Songs, etc.*, published 1649. The original of *Lucasta* is said to have been Lucy Sacheverell, who was affianced to him, but married after hearing a false report of his death at Dunkirk. Lovelace, one of the handsomest men of his day and of high character, after spending his estate in behalf of the royal cause, died a pauper in Gunpowder Alley, Shoe Lane, and was buried in old S. Bride's Church, Fleet Street. He is best remembered by his lyrics, *To Lucasta: On Going to the Wars*; and *To Althea from Prison*. His poems were edited by W. C. Hazlitt, 1864, new ed. 1904.



Richard Lovelace, English poet

**Love-lies-Bleeding** (*Amarantus caudatus*). Annual herb of the family Amaranthaceae. A native of India, it has alternate undivided leaves, and minute dark crimson flowers, clustered like catkins.

**Lovelock, JACK.** See *N.V.*

**Lover, SAMUEL** (1797-1868). Irish novelist and song writer. Born in Dublin, Feb. 24, 1797, he was by turns miniaturist, song writer, novelist, and dramatist. Secretary of the Royal Hibernian Academy, 1830, he became a member in 1836. He helped to found



Love-in-a-Mist. Spray of foliage and flowers: right, fruit and bracts

the Dublin University Magazine, 1835, and was associated with Dickens in the establishment of



Samuel Lover,  
Irish novelist

Bentley's Miscellany, 1837. He had to abandon painting in 1844 through failing eyesight. He gave recitals which he called Irish evenings, in London, Canada, and the U.S.A., 1846-48; was pensioned in 1856 and, dying at St. Helier, Jersey, July 6, 1868, was buried at Kensal Green. He wrote Rory O'More, a National Romance, 1837; Handy Andy, 1842; L.S.D., afterwards called Treasure Trove, and He Would Be a Gentleman, 1844; but is best remembered by his ballads Rory O'More, The Low-backed Car, The Angel's Whisper, The Four-Leaved Shamrock, Molly Bawn, and Widow Machree. He wrote music for his songs and sang them with excellent effect.

**Love's Labour's Lost.** Romantic comedy by Shakespeare, his first play. The princess of France and her three ladies, Rosaline, Maria, and Katharine, frustrate the attempt by Ferdinand, king of Navarre, and Biron (or Berowne), Longaville, and Dumaine, his chief courtiers, to keep the court as an academy from which all women were to be excluded for three years. In Don Armado, a fantastical Spaniard; Sir Nathaniel, a curate; and Holofernes, a schoolmaster, euphuism and pedantry are good-humouredly satirised. The scene is laid in Navarre.

Written about 1592, the same time as some of the Sonnets, with which it has points in common, this play was first printed in a revised form in 1598. The text contains passages which combine the early draft and the revision. Its plot is original, but the author was influenced by Lyly's Euphues, 1580, the same writer's comedies, 1580-92, and by contemporary events, particularly those in France. Armado, Biron, Rosaline, and Dull are respectively precursors of Parolles, Benedick, Beatrice, and Dogberry. The play was mentioned by Meres in 1598. Remarkable for its lyrics, notably the song, When daisies pied, it contains 2,789 lines, including 1,086 prose, 579 blank verse, and 1,028 pentametric rhymes.

**Loving Cup** (Lat. *poculum caritatis*). Large cup filled with wine or punch, and passed from

hand to hand at state banquets, civic feasts, and university gatherings to pledge health. The formal procedure is for the diner who drinks to stand to receive the cup from the diner on his right, to pledge the one on his left, and to remain standing to guard the latter's rear until he has in turn passed the cup.

A form of the old wassail bowl, it is sometimes called the grace cup, and it is said that Margaret Atheling, wife of Malcolm Canmore, in order to induce the Scots to remain at table for the grace after meat, filled a cup of this kind with choice wine, of which each guest was allowed to drink as much as he liked after grace had been said.

The custom of drinking from one cup was observed at the ancient Jewish paschal supper, and in memory of Our Lord's words, at the Last Supper. Drink ye all of it (Matt. 26, v. 27), the cup at Holy Communion is sometimes called the loving cup.

**Low, ARCHIBALD MONTGOMERY** (b. 1888). British scientist, inventor, and author. Born at Broughty Ferry, Dundee, he was educated at S. Paul's School and the Imperial College, London. After serving in



Archibald M. Low,  
British scientist

the First Great War in the army and navy, he became honorary assistant professor of physics at Royal Artillery College. Later, specialising in electrical engineering, he earned reputation by ingenious practical demonstrations. The photography of sound and the development of radio apparatus owe much to Low's imagination. He also invented a radio-control gear for torpedoes, the vibrometer, and the audiometer. A prolific writer for the non-technical reader, he published

over 50 books, including Recent Inventions; Modern Electrical Invention; The Story of Life; Science in the Home; Romance of Transport; Science in Industry; Romance of Fire; Our Own Age.

**Low, DAVID** (b. 1891). New Zealand born cartoonist. Born at Dunedin, April 7, 1891, he was cartoonist to several journals in his own country and Australia. In 1919 he joined the Star in London and soon became known for witty political caricatures. He was, 1927-50, the political cartoonist of the London Evening Standard, in which his work became world-famous, his reactionary Colonel Blimp being a particularly recognizable creation. In 1950 Low joined the Daily Herald. He published The New Rake's Progress, 1934; Political Parade, 1936; Cartoon History of Our Times, 1939; British Cartoonists, 1942; Years of Wrath, 1946. See Caricature illus. p. 1771.



David Low,  
political cartoonist

**Low, SIR SIDNEY JAMES MARK** (1857-1932). A British author and journalist. Born in London, Jan. 22, 1857, he was educated at King's College School and Balliol College, Oxford, and was called to the bar at the Inner Temple, 1892. He edited the St. James's Gazette, 1888-97, and was afterwards associated with the Standard. An authority on imperial questions, Low was made lecturer on imperial and colonial history at King's College, London. He was an alderman of the L.C.C., 1901-05, and was knighted in 1918. His books include The Governance of England, 1904; Political History of England, 1837-1901, 1907. Low died Jan. 13, 1932.

**Low Archipelago.** Series of islands in the Pacific Ocean, lat. (approx.) 20° S., long. (approx.) 150° W. Known by the natives as Paumotu and Tuamotu, it includes the Gambier Islands, Clermont Tonnerre, Krusenstern; most are coralline, many of them being atolls. They yield pearls and copra. Most of them belong to France. See Oceania.

**Low Countries.** Name given to the Netherlands, including Belgium and sometimes Luxemburg. See Belgium; Netherlands.

**Lowe, SIR HUDSON** (1769-1844). British soldier. He was born at Galway, July 28, 1769, the son of



Loving Cup presented by Samuel Pepys to the Clothworkers' Company of London

a military surgeon. He joined the army in 1787, serving with distinction against the French, especially during the Egyptian campaign of 1801. A good linguist, he did much valuable work in S. Europe, and for two years was governor of the Ionian Islands. During 1813-14



Sir Hudson Lowe,  
British soldier

he was sent on missions and served with the Russian and German armies. In 1815 he was appointed custodian of Napoleon at St. Helena. His duties brought upon him much odium and misrepresentation, but he seems to have acted conscientiously in a difficult position. He died Jan. 10, 1844. Consult Sir H. Lowe and Napoleon, R. C. Seaton, 1898.

**Lowell.** City of Massachusetts, U.S.A., one of the two co. seats of Middlesex co. At the junction of the Merrimack and Concord rivers, 26 m. N.W. of Boston, it is served by rlys. and an airport. Its buildings include a city hall, textile school, a state normal school, and the memorial building. An important industrial city, Lowell obtains power chiefly from the Merrimack. Its textile industry, modelled on English methods, made the city in the 19th century the nation's greatest producer of cotton goods. Founded in 1822, Lowell was incorporated in 1826 and became a city in 1836. Population, 101,389.

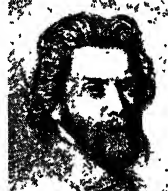
**Lowell, ABBOTT LAWRENCE** (1856-1943). American historian. Born Dec. 13, 1856, at Boston, a brother of Percival Lowell, he was educated at Harvard and Berlin. He studied law and was a practising barrister, 1880-97, but his real interests were in the problems of government, and in 1896 he made an international reputation by his *Government and Parties in Continental Europe*, written from a new point of view, that of an American observer. In 1897 he became lecturer and in 1900 professor of the science of government at Harvard, and in 1909 president of that university. He retired in 1933, and died Jan. 6, 1943. He wrote *Essays on Government*, 1889; *The Government of England*, 1908; *Public Opinion and Popular Government*, 1913.

**Lowell, AMY** (1874-1925). An American poet. Sister of Percival and Abbott Lowell, she was born at Brookline, Mass., Feb. 9, 1874.

Her poetry, in which free verse was united with vivid and unconventional imagery, belonged to the Imagist school, of which she was the avowed head. Her publications included *A Dome of Many Coloured Glass*, 1912; *Men, Women, and Ghosts*, 1916; *Legends*, 1921; *East Wind*, 1926; *Ballads for Sale*, 1929. She produced a biography of Keats, 1905. She died May 12, 1925. Selected Poems, ed. J. L. Lowes, appeared in 1928.

**Lowell, JAMES RUSSELL** (1819-91). American poet, essayist, and diplomatist. He was born at Elmwood, Cambridge, Mass., Feb. 22, 1819, son of the Rev. Charles Lowell, pastor of the Unitarian West Church. He was of Puritan descent; his paternal grandfather in 1780 introduced into the Bill of Rights, a clause abolishing slavery in Massachusetts; an ancestor on his mother's side was Sir Patrick Spens of the famous ballad. After graduating at Harvard, 1838, he studied law and began practice in Boston, but abandoned law for literature. He became editor of *The Pennsylvania Freeman*, in which he took the side of the abolitionists; lectured on poetry at the Lowell Institute, Boston, 1854-55; was professor of belles lettres at Harvard, 1855-77; edited *The Atlantic Monthly*, 1857-61; and, with C. E. Norton, *The North American Review*, 1864-72. He was U.S. minister in Madrid, 1877-80; and in London, 1880-85. In 1844 he married Maria White (1821-53), herself a poet and a writer against slavery, who profoundly influenced his outlook; and in 1857 Frances Dunlap (d. 1885). He passed several summers in England, 1886-89, and died at Elmwood, Aug. 12, 1891.

As America's representative in London, Lowell displayed a tactful firmness that did not hinder his material influence on the improvement of the relations between the two English-speaking peoples. His literary life displayed versatility of genius and was marked by high achievement. It is recorded that he was hushed to sleep as a child by the reading of Spenser's *Faerie Queene*. His first volume, *A Years' Life* and other Poems appeared in 1841; his last, *Heartsease and Rue*, in 1888. His gift



J. R. Lowell,  
American writer

for satirical humour was revealed in the poems in Yankee dialect which began in *The Boston Courier* in 1846, as the work of one Hosea Biglow. Inspired by opposition to the Mexican war, they were published as *The Biglow Papers* in 1848.

His *Fable for Critics*, published anonymously, a rhyming review of contemporary American literature, in which vivacity is combined with critical insight, and the beautifully lyrical *Vision of Sir Launfal*, an excursion into Arthurian legend, also belong to 1848. The second series of *The Biglow Papers*, prompted by the Civil War, began in *The Atlantic Monthly*, 1862, and were collected, 1867. In addition to *The Vision of Sir Launfal*, Lowell's best poetry includes *The Present Crisis*, 1845; *Ode recited at the Harvard Commemoration*, July 21, 1865; *The Cathedral (Chartres)*, 1870; *Agassiz*, 1874; *Three Memorial Poems*, 1877; and a number of nature poems, sonnets and simple but touching lyrics.

Lowell's prose works, cultured, graceful, brilliant, suggestive, but full of learned allusions and appealing on the whole to the select few, include *Fireside Travels*, 1864; *My Study Windows*, 1871; *Among My Books*, 1870-76, containing his notable essay on Dante; *Democracy and Other Addresses*, 1887; *Political Essays*, 1888; *A Life of Hawthorne*, 1890; *The Old English Dramatists*, 1892; *Latest Literary Essays*, 1892; *Impressions of Spain*, 1900. He edited the works of several English poets and wrote an introduction to an edition of Walton's *Compleat Angler*, 1889.

**Bibliography.** Writings of J. R. L., Riverside ed., 11 vols., 1899; *The Poet and the Man*, F. H. Underwood, 1893; *Letters*, ed. C. E. Norton, 3 vols., 1894; J. R. L. and His Friends, E. E. Hale, 1899; J. R. Lowell, H. E. Scudder, 1901; *Life and Work*, F. Greenslet, 1905; *Bibliography*, G. W. Cooke, 1906; and *His Poetry*, W. H. Hudson, 1912; *L. as a Critic*, J. J. Reilly, 1915; *New Letters*, ed. M. A. de W. Howe, 1934.

**Lowell, PERCIVAL** (1855-1916). American astronomer. Born March 13, 1855, in Boston, he was educated there and at Harvard. After some years in Japan and Korea, he devoted his energies to the erection of the Lowell Observatory at Flagstaff, Ariz., and the prosecution of researches there. In 1902 he was made non-resident professor of astronomy at the Massachusetts institute of technology. He devoted

himself especially to researches on planetary markings and believed himself to have confirmed and enlarged Schiaparelli's discovery of canals on Mars, for which he was awarded the Janssen medal of the French astronomical society in 1904. The ill-defined markings on Mercury and Venus were submitted by him to an equally searching scrutiny. He wrote *Mars*, 1895; *The Solar System*, 1903; *Mars and its Canals*, 1906; *Mars as the Abode of Life*, 1908; and volumes on the *Far East*. He died Nov. 12, 1916. See *Mars*.

**Lower Deck.** The principal gun deck in sailing ships of war, and frequently so called. Below it were the orlop deck and cockpits, and above it, in the order given, the middle, main, and upper decks. In modern warships almost the whole armament is mounted on the upper deck, and in the First Great War ships with lower deck guns, such as *Good Hope* and *Monmouth*, often found them practically useless, as they were too close to the water. The forward part of the lower deck was formerly used for the messing and berthing of the ship's company, whence the petty officers and men of the navy are referred to collectively as the lower deck.

**Lower Saxony.** A *Land* of W. Germany, in the British zone of occupation, formed 1946 from the provs. of Hanover, Oldenburg, and Brunswick (*qq.v.*), with the city of Hanover as its cap. In 1949, 30 p.c. of the pop. were refugees and displaced persons.

**Lowestoft.** Mun. bor., market town, seaport, and watering-place of Suffolk, England. The full



Lowestoft arms

title of the bor. is Lowestoft and Oulton Broad. It stands at the mouth of the Waveney, 16 m. by rly. S. of Great Yarmouth. The chief church is S. Margaret's, a Perpendicular building. There are esplanades, piers, etc. The old town is on a hillside, and the narrow streets leading down to the sea are called the scores. There are an inner and an outer harbour, and large fish quays and markets. Near by is Lowestoft

Ness, the most easterly part of England. Lowestoft originated as a fishing port, but soon obtained the right to hold markets and fairs, and in 1885 became a borough. It gives its name to a county constituency. Market day, Wed. Pop. 41,768.



The battle of Lowestoft is the name given to the naval engagement between the English fleet under James, duke of York, and a Dutch one, June 3, 1665. War had broken out in March. When the rival fleets met off Lowestoft, an obstinate battle took place, ending in the flight of the Dutch vessels, after the flagship of their admiral Opdam had been blown up.

A naval base during the First Great War, Lowestoft was bombarded by the Germans from the sea and bombed from the air. On April 25, 1916, and again on Nov. 26, 1916, it was attacked by German warships. On July 26, 1918, a German submarine operating off the town sank two smacks and took the crews on board. Lowestoft also suffered from German air raids in the Second Great War.

**Lowestoft.** Name of a hard paste china made at Lowestoft, England, 1775-1802. It has a good body and an Oriental character, with decorations in blue and white. Polychrome was used for scenery and figure painting. An earlier soft paste porcelain and an earthenware were made from 1756 onwards.



Lowestoft. Specimens of the china-ware formerly made at Lowestoft. From Herbert Allen collection, Victoria and Albert Museum

**Lowicz.** Town of Poland. In the co. of Warsaw, it stands on the Bzura, a tributary of the Vistula, 45 m. S.W. of Warsaw, and on the Warsaw-Berlin rly. There were soap, candle, oil, and vinegar factories and tanneries, and trade was done in corn, leather, and horses. The neighbourhood had flour mills and sugar factories. In the 14th cent. it was the capital of a principality.

**Lowland.** Stretch of country which is, on the whole, low or level, especially if compared with neighbouring regions. Thus the Lowlands of Scotland comprise the region between the northern highlands and the southern uplands. Great Britain, S.E. of a line joining the mouths of the Tees and Exe rivers, is also a great lowland,



Lowestoft, Suffolk. S. Margaret's parish church. Top, left, yachts in the Basin decorated for a regatta

for the hills which cross it rarely attain an elevation of 1,000 ft. Lowlands are much more suitable for settlement than highlands, and in temperate latitudes concentrate the most important modern commercial activities. See *Highland*; *Plain*.

**Lowland Regiment.** Former British army unit. Formed at Edinburgh in Dec., 1940, it provided primary training for volunteers and national service men preparatory to their being drafted into one of the Scottish Lowland regiments. It was disbanded in July, 1943, when its functions were transferred to the newly-formed General Service Corps.

**Low Latin.** Name generally given to the Latin in use from A.D. 600 to 1500, sometimes used to include the Latin of the period 175-600, which, however, is more commonly called Late Latin. It is chiefly characterised by extensive borrowing from Greek,

Teutonic, and Oriental languages, and neglect of grammatical rules. See Latin Language.

**Lowndes, MARIE ADELAIDE** RENÉE BELLOC (1868-1947). British writer. Daughter of Louis Belloc, French barrister, and sister of Hilaire Belloc (*q.v.*), she was educated in England and in 1896 married F. S. A. Lowndes. Her first novel was *The Heart of Penelope*, in 1904; her second, *Barbara Rebell*, 1905, made her reputation as a writer of distinction. Her later novels were often more sensational. *The Lodger*, 1913 (based on the mystery of Jack the Ripper), was translated into many languages, sold some million copies, and was also successful as a film. Well remembered were *What Really Happened*, 1926; *The House by the Sea*, 1937; *Lizzie Borden*, 1940. Her best work was contained in reminiscences: *I too Have Lived in Arcadia*, 1941; *Where Love and Friendship Dwelt*, 1943; *The Merry Wives of Westminster*, 1946; *A Passing World*, 1948 (posth.). She died Nov. 14, 1947.



Mrs. Belloc Lowndes, British novelist  
Hoppe

**Lowndes, WILLIAM THOMAS** (c. 1798-1843). British bibliographer. The son of a London publisher, he devoted 14 years to compiling a *Bibliographer's Manual*, which, modelled on Brunet's *Manuel du Libraire*, appeared in four vols., Jan. 1, 1834. During 1839-43 he issued several parts of *The British Librarian*, but his laborious and unremunerative drudgery reduced him to poverty of health and pocket. He died July 31, 1843. H. G. Bohn (*q.v.*), having acquired the copyright of the *Manual* from W. Pickering, brought out a new and revised edition 1857-64. The first work of its kind in English, it is still a useful guide to English literature down to the middle of the 19th century.

**Low Sunday.** Name given to the first Sunday after Easter. According to some authorities it was so called because it is a kind of second or lower celebration of the great feast, and it was once a custom to repeat some of the paschal solemnities on this day. Others suggest a corruption of *Laud Sunday*, *laudes*, i.e. praises, being the first word of the sequence (*q.v.*) for the day. Yet another suggestion is a corruption of *Close Sunday*. The

French call the day *Pâques closes* (Lat. *Pascha clausum*), or close of Easter; the Greek Church uses the term *New Sunday*, in reference to the new life entered upon by the newly baptized. In old times the day was called *Dominica in albis*, or the Lord's Day in albs, or white garments, those who had been baptized on Easter Eve wearing their chrisoms, or white robes, for the last time before these were deposited in the church.

**Low Temperature Carbonisation.** Term generally applied to the carbonisation of bituminous coal of medium or weakly caking type, or of brown coal or lignite, at temps. up to 600° C. (1,110° F.) in retorts constructed of metal or of firebrick. The main object in carbonising coal at low temps. is to produce easily combustible smokeless fuel (low temp. coke) for use instead of coal in open domestic fires. In addition to coke, which is the chief product, gas, tar, and ammoniacal liquor are also obtained. The burning of raw coal entails the loss of valuable by-products, recovered in the production of low temp. coke, as well as polluting the atmosphere.

Carbonisation of the charge of coal can be effected either by heating the retorts externally by means of gas (coal gas, water gas, or

oven coke, and can be burned in all types of domestic fireplace.

The coal gas produced from bituminous coal in externally heated retorts is of high calorific value—800 to 900 B.Th.U. per cu. ft.—and contains high proportions of unsaturated hydrocarbons (ethylene, propylene, butylene) and saturated hydrocarbons (methane, ethane, propane) as compared with town's gas produced by high temp. carbonisation. The gas produced in internally heated retorts is mixed with the burned gases used for carbonising the charge. It is in consequence appreciably lower in calorific value—180 to 230 B.Th.U. per cu. ft.—than the gas from externally heated retorts, the calorific value depending on the vol. of burned gases used to effect carbonisation. In one type of internally heated retort the coal is carbonised by steam heated to 550° C. (1,020° F.) and gas is produced similar in composition to that obtained in externally heated retorts.

Low temp. tars differ appreciably in physical and chemical properties from tars produced in gasworks retorts and coke ovens at high temp.—1,350° C. (2,460° F.). They contain higher homologues of the compounds present in high temp. tars. They also contain

	Low temp. carbonisation		High temp. carbonisation
	External heating	Internal heating	External heating
	Yields per ton of coal as charged		
Moisture in coal as charged p.c.	6-10	10-15	2-3
Coke, cwt. . . . .	13.5-15.5	8-12	13.5-14.5
Gas, cu. ft. . . . .	2,500-4,000	30,000-50,000	12,500-20,000
Gas, calorific value B.Th.U. per cu. ft. . . . .	800-900	180-230	450-560
Gas, therm. . . . .	22.5-32	69-90	70-90
Tar, gals. . . . .	18-22	16-18	10-14
Tar, s. g. . . . .	1.00-1.04	1.04-1.06	1.09-1.12

producer gas) burned in chambers surrounding the retorts, or internally by means of hot combustion gases passed through the charge of coal. In the latter case the heating gases can be (a) produced by the combustion of a portion of the coal gas made in the process, (b) produced when air is passed through the charge, (c) generated in a separate plant. Many different designs of retorts have been used for the process; in some the charge of coal is stationary, in others in motion, during treatment.

The coke produced, owing to its physical structure and its relatively high volatile matter content, ignites easily, is more combustible than gasworks or coke-

higher proportions of paraffinic and phenolic compounds with appreciably lower proportions of pitch and free carbon. The liquor produced contains only a small quantity of ammonium compounds and is not commercially useful.

The yields of products vary considerably according to the type of plant used. Typical yields from externally and internally heated retorts are shown in the table, together with the yields obtained by high temp. carbonisation.

D. MacDougall

**Lowther, JAMES** (1840-1904). British politician. Born Dec. 1, 1840, he was educated at Westminster School and Trinity College, Cambridge, and called to the

bar in 1864. He entered parliament as Conservative M.P. for York in 1865. Between 1867 and 1880 he held office as parliamentary secretary to the poor law board, under-secretary for the colonies, and chief secretary for Ireland. After eight years' absence from the house he sat for Thanet from 1888, a Tory "diehard" but a popular member, dying Sept. 12, 1904.

**Lowther, JAMES WILLIAM.** Speaker of the British house of commons, 1905-21, who became Viscount Ullswater (*q.v.*).

**Lowther Arcade.** A covered avenue formerly connecting the Strand with Adelaide Street, London, W.C. Designed 1830-32 by Witherdon Young, and named after a chief commissioner of woods and forests, it was 245 ft. long, had a domed glass roof, and held shops for the sale of toys and fancy goods. Its site has been occupied since 1904 by Coutts's Bank.

**Lowther Hills** OR LEADHILLS. Range of hills in Scotland. They are on the borders of Lanarkshire and Dumfriesshire. Green Lowther (2,403 ft.) and Lowther Hill (2,377 ft.) are the loftiest summits.

**Loy, MYRNA** (b. 1905). American film actress. Her surname was Williams, and she was born of Scottish-Welsh stock at Helena, Mo., Aug. 2, 1905. She studied dancing with Ruth St. Denis, and entered films in 1925. In early pictures she usually played the part of an adventuress, but in 1934 became famous by her brilliant performance with William Powell in *The Thin Man*, a picture which led to a series of "comedy thrillers." She went back to drama in *The Rains Came*, 1940. Bachelor Knight was shown in 1947.

**Loyal Regiment.** Regiment of the British army and the only unit to incorporate "Loyal" in its title. The 1st battalion was raised in Scotland in 1740 as the 47th Foot and saw active service in the Jacobite rebellion of 1745. Drafted to Nova Scotia in 1758, it served at the siege of Louisburg and was known as *Wolfe's Own*. At Quebec (1759) it was in the centre of the thin British line which broke up the French attack. From Canada, the 47th went to America and, after fighting at Bunker Hill, was part of the British force that surrendered at Saratoga. It received the title *The Lancashire*

Regiment, 1782, and served under Wellington throughout the Peninsular War. It was in the Burmese war, 1825-26, the Crimea, and the Afghan war, 1878-79.

In 1793 the present 2nd battalion of the Loyal Regiment was raised as the 81st Foot and called the Loyal Lincoln Volunteers. It first saw service in the Kaffir war, 1800, and then served in the Peninsula, fighting under Moore at Corunna. It served with distinction at Waterloo and in Afghanistan, 1878-79. The 47th and 81st Foot were linked in 1881, to form the 1st and 2nd battalions of the Loyal North Lancashire Regiment, which distinguished itself in the relief of Kimberley.

Twenty-one battalions of the Loyals were raised for the First Great War and gained the battle honours: Mons; Aisne, 1914, '18; Ypres, 1914, '17, '18; Somme, 1916, '18; Lys; Hindenburg Line; Suvla; Gaza; Bagdad; and Kilima-Njaro. In 1920 the regiment's title was altered to Loyal Regiment (North Lancashire). During the Second Great War there were eleven regular and territorial battalions at home and overseas. The 1st was in France (1939-40), Africa, and Italy; the 2nd and 5th were captured at Singapore; the 10th served throughout the Italy campaign; the 6th, a reconnaissance regiment with the 2nd div. in Burma, earned distinction at Kohima; and the 7th acted as an A.A. unit in N.W. Europe (1944-45). The regimental depot is at Preston.

**Loyalties.** Drama by John Galsworthy. Ronald Dancy, an army officer, is accused by Ferdinand de Levis, a wealthy Jew, of stealing money from him at a house party. Some of those who know Dancy believe he may be guilty—as indeed he is—and the play traces the conflicts of loyalties, to relative, friend, profession, club, race, and to truth and justice, which beset them. *Loyalties* was first performed at the St. Martin's Theatre, London, March 8, 1922.

**Loyalty.** A group of French islands in the Pacific Ocean, approx. 60 m. E. of New Caledonia. Lifou, Mare, and Uvea are the largest islands. Bananas and coconuts are cultivated, sandalwood, copra, and rubber are exported. The people, mostly Roman Catholics, are of mixed Polynesian and Melanesian descent. The group has been French since 1864, and forms one of the dependencies of New Caledonia. Area, 800 sq. m.

**Loyola, S. IGNATIUS OF** (1491-1556). Founder of the Society of Jesus. He was the son of Don Beltran Y. de



S. Ignatius of Loyola, founder of the Society of Jesus. Painted by Sanchez-Coello, Madrid.

Oñez y Loyola and Marina Saenz de Liconay Balda (Lopez de Recalde is an error), and was born in the Basque prov. of Guipuzcoa. In youth Loyola was in contact with the court circle of Ferdinand and Isabella; he was talented, ambitious, and dissipated. In 1517 he became a soldier and in 1521 defended Pampeluna so gallantly against the French that when a cannon-ball tore one of his legs and shattered the other the garrison surrendered. He asked for romances as distraction, about heroes he might imitate: only lives of saints were found: he day-dreamed alternately about rivaling these, and about chivalry and ideal ladies.

Suddenly he saw the futility of this; he went on a pilgrimage to Montserrat and made his knight's vigil before Our Lady and hung up his arms there. During 10 months of fierce penance and scruples in a cave at Manresa and of sickness in hospitals, he made notes which finally became his booklet, *Spiritual Exercises*. He voyaged amid incredible hardships to Jerusalem meaning to stay there, but was sent back wondering what to do. At least he must be educated, so he gave 11 years to this, beginning with Latin among schoolboys at Barcelona, then philosophy and theology at Alcalá, Salamanca, and Paris, harassed by attacks on his orthodoxy and reforming zeal and, in his destitution, begging alms as far as Flanders and England. Friends deserted him, until in 1534 with six others (to whom he later added a further three) he vowed poverty and chastity. They simply placed themselves at the pope's disposal, meanwhile serving in hospitals and preaching.

In 1537 Ignatius was ordained and went to Rome, calling his group the company (a military term) of Jesus. Jesuit, a word never used by Ignatius, had long been a snoring nickname for men who cantingly repeated the holy Name. Like the name Christian, from a term of scorn it became normal



Loyal Regiment badge



and respectful. These men gradually saw they needed a minimum rule of life: the first formula was approved in 1540, but the company (of which Ignatius became general superior) was at first limited to 60 members. The earliest text of *Spiritual Exercises* belongs to 1541; its solemn approbation to 1548. It is a method by which a man, reviewing in solitude the great truths of religion and the example of Christ, may seriously choose how best to spend his life. Ignatius made rules reluctantly, desiring the maximum of spontaneity together with discipline among his men; his Constitutions received their final touches only after his death. He had no specific aim other than liberty to work at whatever the needs of the Church might indicate: hence he abandoned any special dress, the singing of choir, dangerous honours, and obligations proper to ecclesiastical high rank: all his additions, which included service of the plague-stricken, of the bashful poor, of prostitutes, and even educational (the Roman and German colleges and university work generally), were due to pressure of circumstances.

But the society grew rapidly, and sent missionaries everywhere; already in 1549 Francis Xavier was provincial of India. Before Ignatius died his firm paternal government was controlling 12 provinces. He was a man of intense prayer and complete self-abnegation; as calm as he was fearless; as wise as he was simple; grave, yet beloved. He died July 31, 1556. In 1622 he was canonised. The best biography is *The Origin of the Jesuits*, J. Brodrick, 1940. Consult also Loyola's Testament, Eng. trans. E. Rix, 1900. Pron. Lo-yo'-la. See Jesuits.

C. C. Martindale, S.J.

**Lozenge.** In heraldry, diamond-shaped charge, differing from the fusil (q.v.) in being broader. A



Lozenge in heraldry

lozenge may be pierced; if the hole is circular, the charge is called a rustre; if the hole is square, it is described as square pierced; if lozenge pierced, showing a narrow band, it is called a mascle, and is supposed to represent a link of chain armour. A shield divided by diagonal lines from right to left, and crossed by diagonal lines from left to right, is said to be lozengy.

The word is also used for a small tablet, often medicated, such as the familiar cough lozenge.

**Lozère.** Dept. of France. It is a mountainous area situated high up on the Central Plateau, N.W. of the Cévennes scarp. The Causses of the S.W., dry limestone areas, some over 3,000 ft. high, are a feature of the dept. The chief rivers are the Lot and the Tarn. The staple industries are the rearing of cattle and sheep, and the growing of cereals and fruit. Silk culture is increasing. Cheese is made and bees are kept. The principal places are Mende and Florac. Before the Revolution the dept., which has an area of 1,996 sq. m., was in the province of Languedoc. Pop. 90,523. See Aveyron.

**L.S.D.** Symbol for pounds, shillings, pence. These are the initial letters respectively of the Latin *librae*, *solidi*, and *denarii*. As *livre*, *sol* (sou), and *denier*, these terms were originally brought from France to England.

**Lualaba.** River of the Belgian Congo. One of the head-waters of the Congo, it rises near the S. borders of the Katanga prov., and flows generally N. to its confluence with the Lukuga. Its most important affluent is the Luapula, which unites with it to form what is generally spoken of as the Lualaba-Congo. The river is navigable for launches

intermittently from Bukama, the terminus of the railway from Cape Town to Kongolo, and from Kindu to Ponthierville. The chief places on the banks are Bukama, Ankoro, Kabalo, the terminus of the rly. from Albertville on Lake Tanganyika, Kasongo, Kindu, Lova, and Ponthierville.

**Luang Prabang.** Capital of the kingdom of Laos, Indo-China. It stands at the confluence of the Mekong and Namkan 250 m. S.W. of Hanoi. The ruler is assisted by a French administrator.

**Luapula.** River of Northern Rhodesia and the Belgian Congo. Forming part of the boundary between these countries, it issues from Lake Bangweulu, and flows N. through Lake Mweru, where it becomes the Luvua, and thence to the Congo. From Johnston Falls to Lake Mweru it is navigable.

**Lubaantum.** Ruins in British Honduras of an ancient Mayan city near Punta Gorda. The ruins are of vast extent and have been investigated by the British Museum. They date from 3,000 B.C. to A.D. 1,700.

**Lubbock.** City of Texas, U.S.A., and co. seat of Lubbock co. Situated 110 m. S. of Amarillo, it is served by the Atchison, Topeka, and Santa Fé rly. Originally a cattle town and now a centre of dairying and cotton growing and processing, it is also a commercial and financial centre. The Texas technological college occupies 2,000 acres, including an experimental farm. Lubbock was founded in 1891 when the communities of Monterey and Old Lubbock decided to pool their resources. Pop. 31,853.

**Lübeck.** City, former principality, and until 1945 free state of W. Germany. It is situated in Schleswig-Holstein near the mouth of the river Trave, which drains into Lübeck Bay, and is 38 m. N.E. of Hamburg, 145 m. N.W. of Berlin. Its name, of Wendic origin, means lovely one; in spite of the destruction of many of its remarkable medieval and 18th cent. buildings by bombing from the air in 1942, the city still deserves its name. Lübeck originated the northern form of Gothic architec-



Luang Prabang, Indo-China. Dancers and musicians at a performance in the open-air theatre

ture, in which whole sections of the city were built in plain or glazed brick, with lofty spires or gabled fronts; and the inner town, on an island formed by the rivers Trave and Wakenitz and the Elbe-Trave canal, remains a show piece of medieval art. S. Mary's (1280-1304) was gutted during the Second Great War, and its 407-ft.-high twin spires were destroyed, but the vaulting remained and the church was re-roofed. The cathedral, founded 1173 by Henry the Lion and completed 13th to 14th

cents., with two towers nearly 400 ft. high, was damaged, but not beyond repair; most of its treasures, including the altar painting by Hans Memling, were saved. S. Catherine's (14th cent.), which had been converted into a museum, escaped damage and was reconverted into a church. S. James's (13th cent.) was undamaged, as was the remarkable Rathaus (1250 and later, an outstanding building of its kind), except for damage by fire to the interior of the great hall. The Holy Ghost hospital (13th cent.), the shipmen's guildhouse (16th cent.), and the monumental Holsten gate (1477) were all preserved. The Buddenbrook house (1758), setting of the most famous novel by Lübeck-born Thomas Mann, was destroyed, though its façade remained standing.

#### Chief Baltic Port

The free state of Lübeck was 115 sq. m. in area, pop. (1935) 140,900, by 1949 increased by refugees from Russian-occupied Germany to 241,400. The city had (1935) 133,021 inhabitants; the only other town of the state, the small port and seaside resort of Travemünde, was incorporated with the city in 1915. Lübeck's economic importance derived from its old rôle as main port of the Baltic, and head of the Hanseatic League: a rôle it preserved until recently through its modern port facilities and the deep canal which permitted sea-going vessels to come right into the city. Before the Second Great War about 9,000 seagoing vessels entered the port annually; 3,000 inland vessels up to 7 ft. draught also reached it by the Elbe-Trave canal from Hamburg and the Elbe. Lübeck's own industries employed more than 50,000 workers and comprised blast furnaces, iron- and steelworks, engineering yards, shipbuilding, and the making of enamelware, furniture, wooden and earthen ware, food preserves, sweets, etc.

As a free port, Lübeck stocked timber, grain, ore, fertilisers, etc., and dealt with all the countries round the Baltic. Its marchpane and its liquors were famous.

Lübeck was founded in 1143 by Count Adolf of Holstein and, under Henry the Lion, about 1160 became an important settlement of Westphalian merchants; it came under the protection of the Holy Roman empire 1181, and, after a short Danish occupation, received the privileges of a free city 1226. German colonisation spread N. and E. from it; the Hanseatic league developed, and by the end of the

13th cent. Lübeck was its undisputed head, greatest seaport between Riga and Bruges and, under a patrician council, successful in home and foreign struggles. In 1530, however, a democratic opposition under Jürgen Wullenwever (*q.v.*) enforced Protestantism. Civic strife followed and, in 1535, led to a collapse from which neither the Hansa nor Lübeck recovered. Several wars, with Denmark, Sweden, etc., and in the 17th cent. the Thirty Years war, which left Sweden dominant in the Baltic, reduced Lübeck's importance still more. It recovered in the 18th cent. Taken by Napoleon, 1806, incorporated with France, 1810, and liberated, 1813, although now encircled by Danish territory, it regained its importance as a trade emporium. It joined the N. German confederation and customs union in 1868 and, under the empire as well as under the Weimar republic, preserved its republican constitution and its rights as a free city and port. It was governed by a diet of 80 and a senate of 11 under a burgomaster elected for two years; it had a particularly progressive system of education. During the Nazi regime it was subordinated, with Mecklenburg, to a *Reich Statthalter* whose seat was at Schwerin.

During the Second Great War the R.A.F. heavily attacked Lübeck, setting the port installations and U-boat building yards and parts of the city on fire, in the night of March 28-29, 1942. It was captured May 2, 1945, with very little fighting, by the British 11th armoured div., and came within the British zone of occupation.

Edgar Stern-Rubart

**Lübeck Bay.** Inlet of the Baltic on the German coast. It runs in, as a continuation of Mecklenburg Bay, from N.E. to S.W., for a distance of 16 m., to the free state of Lübeck, between Holstein and Mecklenburg. The river Trave, which flows into it, has been deepened to afford connexion with the port of Lübeck, 14 m. inland, available for ocean-going steamships. It is sometimes called Neustadt Bay, from the port of that name on the Holstein coast.

**Lubitsch, ERNST** (1892-1947). German-American film director. Born in Berlin, Jan. 29, 1892, he entered the film world as a comic actor in 1913, and within a year had become a director. His first important film was *Gypsy Blood*, 1921, after which he went to Hollywood. By a series of musical comedies with Maurice Chevalier

in the leading part, including *The Love Parade*, 1929, *The Smiling Lieutenant*, and *One Hour with You*, he established his reputation as a brilliant and witty director. His later films include *Trouble in Paradise*, *The Man I Killed*, and *Heaven Can Wait*. He died Nov. 30, 1947.

**Lublin.** Town of Poland, the capital of the co. of the same name. It gives its name also to one of the six military dists. into which Poland is divided. It is 100 m. S.E. of Warsaw, on the Bistrzyca, a tributary of the Wieprz, and on the Warsaw-Kovel rly. It was long the second city of Poland, until it was eclipsed by Lodz, and in appearance remained inferior only to Warsaw. Its chief industries have been brewing, and the manufacture of beet-sugar, tobacco, candles, and soap, and a considerable trade was done in corn, wine, linen, and woollen goods. Poland's independence was proclaimed here Nov. 9, 1918, by a workers' and peasants' council.

When the Germans invaded Poland in Sept., 1939, they bombed Lublin heavily from the air. After the partition of the country between Russia and Germany, Lublin town and co. were occupied by the Germans who set up at Maidanek (*q.v.*), close to the town, one of their chief extermination camps. Lublin town was captured by troops of Rokossovsky's 1st White Russian army in an assault by tanks, cavalry, and infantry on July 24, 1944. Next day a "popular assembly" meeting there invested with provisional powers a Polish committee of national liberation set up July 22 at Chelm, 43 m. to the E., and declared Lublin the temporary capital. The committee moved there, and on Dec. 31 proclaimed itself the provisional govt. of Poland. It was recognized as such by Russia, Jan. 5, 1945. The Russians liberated Warsaw Jan. 17, and on the 18th the Lublin govt. moved there. See Poland: History.

**Lubricants** (*Lat. lubricus*, slippery). Substances used to reduce friction in all kinds of machinery where solid surfaces move in contact. This reduction of friction is brought about by the substitution of fluid friction between the moving surfaces for solid friction, which may be as much as ten thousand times as great. Lubricants may be liquid or solid. Liquid lubricants are called lubricating oils, and these

may be either fixed (fatty) oils or mineral oils. The fixed oils (so-called because they cannot be distilled) may be of vegetable or animal origin. Typical vegetable lubricating oils are castor oil (for a long time accepted as the best lubricant for the petrol engine) and rape oil. Animal oils used include lard oil, sperm oil, and neatsfoot oil. In general, the fixed oils have the disadvantage that they tend to oxidise easily, particularly at the high temperatures prevailing in engines.

The petroleum industry provides a wide range of mineral lubricating oils whose great advantage over the fixed oils is their stability, resistance to oxidation, and cheapness. They are produced in a great variety of viscosities, ranging from thin, light oils to heavy, immobile semi-liquids. However, mineral oils do not form such a tenacious adsorbed layer in contact with metal surfaces as do the mixed oils, i.e. they are relatively deficient in oiliness.

#### Solids and Semi-solids

For special purposes, such as steam cylinder lubrication, it is common to blend mineral oils with a small percentage of fixed oils to improve oiliness while retaining stability. Additives are also frequently added to petroleum lubricating oils for special purposes—e.g. to keep carbonaceous particles in dispersion (detergent additive) or to prevent gum and varnish from formation (gum inhibition). For oils which will be subjected to high shearing forces, as in some types of gears, substances such as certain sulphur derivatives are added to strengthen the oil-metal bond.

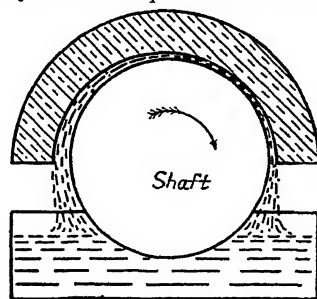
Solid lubricants are materials such as graphite, talc, soapstone, and mica, whose action is to fill the small pits and irregularities in surfaces which bear on each other, and in this way to reduce the solid friction. They are generally used in association with an oil or grease, which acts as a vehicle.

Semi-solid lubricants, or greases, are more common. They are combinations of various types of petroleum lubricating oils with soaps and vary considerably in stiffness. Greases can be classified as lime or calcium soap greases and sodium soap greases. Potassium, lithium, or aluminium soaps are also sometimes used for special purposes.

Specification of all the properties of a good lubricant is difficult, since a good oil for one purpose

may be quite unsuitable for another. Mere appearance, colour, or feel is a very unsafe guide, and extended trial under working conditions is necessary.

**Lubrication** (Lat. *lubricus*, slippery). Term for the process by which a liquid film is inter-



Lubrication. Railway axle-bearing with eccentricity to journal exaggerated. A wedge-shaped film of lubricant forms between

posed and maintained between two surfaces which are moving relatively to each other. The motion may be rotary, e.g. a shaft in its bearings, or sliding, e.g. the piston or crosshead of an engine, or a combination of the two motions as in the case of a thrust block. With lubricated surfaces fluid friction, due to the shearing of the film, is substituted for solid friction, thus reducing the energy wasted and heat generated to a comparatively small amount, with a corresponding reduction of wear.

Viscosity is an important property of a lubricant, since a lubricant of high viscosity gives a high resistance to shear and hence an increase in frictional resistance, while low viscosity gives a film that may not sustain loads without being squeezed out. Since viscosity diminishes rapidly with increase of temp., bearings which tend to run warm should be supplied with lubricant of fairly high viscosity at ordinary temp. In fact, semi-solid greases are often used for bearings which tend to heat during running. Lubricants which tend to oxidise and form gummy deposits should be avoided.

With film lubrication the surfaces are separated by a film of oil, there being a pressure in this film which increases from zero at the boundaries of the area of contact to a maximum at some intermediate point. For the formation and maintenance of this film there must be a finite difference between the radius of the journal and that of the bear-

ing, and the bearing must be slightly eccentric to the journal so that the film formed is wedge-shaped (see fig). The lubricant should be introduced at the point of lowest pressure. The minimum thickness of the film is usually small, varying from 0.004 in. to 0.006 in., so that freedom from particles of grit is of the utmost importance. If the supply of lubricant fails, or is inadequate, the film is gradually squeezed out, and metallic contact and eventual "seizing" may take place.

Certain vegetable oils, such as rape seed, cotton seed, and castor oils, adhere to (or are adsorbed by) the surfaces of metals by molecular attraction and are not easily removed. Thus, blending a small percentage of vegetable oil with a straight mineral oil reduces the tendency to seize as a result of a failure of lubrication. This is known as boundary lubrication.

#### Supply of Oil

In general, if a liberal supply of oil is conveyed to the bearings by forced lubrication, a straight mineral oil of the required viscosity will give good results. With drip lubrication and with reciprocating surfaces, a blended oil is desirable.

In order that a film may be formed and maintained, a continuous supply of lubricant must be provided. Where it is possible to enclose the whole of the working parts, forced lubrication is adopted, the oil being conveyed under pressure (20 to 40 lb. per sq. in. usually) from a gear pump to the separate bearings. Only sufficient pressure is required in the supply piping to ensure an adequate supply to each bearing at a point of low pressure. This pressure takes little part in supporting the load, as the film will maintain itself under maximum pressures of 2,000 lb. per sq. in.

For bearings of slow speed engines and line shafting, the ring oiler may be used, consisting of a loose ring hanging on the shaft and dipping into a reservoir of oil. Where the upper part of the bearing is unloaded, or intermittently loaded, as in the case of a gudgeon pin, the oil may be introduced at the top and grooves provided for spreading the oil. Grooves should not be cut in the lower part in this case, as maintenance of a continuous film then becomes difficult.

Various devices are used for drip feed. The sight-feed lubricator used for steam engines depends on the displacement of

lubricant by steam condensing in a small coil. In some internal combustion engines a pump, driven by a ratchet motion from an eccentric on the lay-shaft, is used.

Graphite suspended in the lubricant is often used for new bearings. This fills up microscopic irregularities in the surface and thus assists the formation and maintenance of the film.

Reciprocating surfaces present a more difficult problem, and entry of the oil should be assisted by easing off the sliding part at the point of entry and in some cases by dividing the surface into a number of strips.

Lubrication of the piston of a trunk engine is of very great importance, since the greater part of the friction of the engine is piston friction. The problem is complicated by the possibility of "blow-by" from the combustion products, producing contamination and loss of viscosity.

Collar thrust bearings have always given rise to a problem, particularly for large marine engines. With a plain bearing the pressure over the surface is uniform and formation of a film is difficult, so that pressures have to be restricted to from 30 to 50 lb. per sq. in. With the newer Michell bearing, tilting pads are used and a film is maintained with pressures of 500 lb. per sq. in. and upward, so that a single collar can take a thrust requiring eight to ten collars with the older type.

**Lucan** (A.D. 39-65). Roman poet whose full name was Marcus Annaeus Lucanus. He was born at Corduba in Spain, a nephew of Seneca. Owing to the latter's high position at the court of Nero, Lucan started his career under the best auspices, and first attracted notice by a panegyric of the emperor. Later he incurred the jealousy of Nero, who regarded himself as a consummate artist, and viewed with disfavour the growing reputation of the young poet, and this estrangement from the emperor drove Lucan into the arms of those who under the leadership of Piso formed a conspiracy to assassinate Nero. The conspiracy was discovered, and Lucan denounced his own mother and others, but this did not save him, and he was compelled to commit suicide at 26. Had he lived longer Lucan might have done great work. As it is, the *Pharsalia*, an epic dealing with the fall of the Roman republic, especially the war between Caesar and Pompey, Lucan's hero, the only work of his which has been

preserved, is a poem abounding in many passages of brilliant rhetoric, if not true poetry. Trans. by N. Rowe, 1718; E. Ridley, 1919.

**Lucan, GEORGE CHARLES BINGHAM, 3RD EARL OF** (1800-88).



3rd Earl of Lucan,  
British soldier

Born in London, April 16, 1800, he was the eldest son of the 2nd earl. Educated at Westminster School, he entered the 6th Foot in 1816, but saw no active service until the Crimean War. During 1826-30 he was M.P. for Mayo, and in 1839 succeeded to the earldom. In 1854 Lucan went to the Crimea in command of the cavalry division. This he led at Balaclava, and some part of the blame for the catastrophe there is his; Lord Raglan asserted it was due to the earl's failure to interpret instructions properly. Lucan was recalled to England, where, refused a court-martial, he defended his conduct in the house of lords, and published his divisional orders and correspondence. In 1887 he was made a field-marshal. Died Nov. 10, 1888.

The 5th earl (1860-1949), also a soldier, was chairman of the City of London Territorial Force Assoc., 1912-41, and a captain of the corps of Gentlemen-at-Arms, 1931-40. He was succeeded by his son George (b. 1898). An eldest son is called Lord Bingham. Lucan is a small town 7 m. W. of Dublin.

**Lucania**. Ancient division of S. Italy. It lay between the Tyrrhenian Sea and the Gulf of Taranto, S. of Apulia, and N. of Brutii. There were many flourishing Greek colonies on the coast. Lucania was conquered from the Oscans by the Lucani, an offshoot of the Samnites, in the 5th century B.C., and subdued by the Romans 272-201 B.C. It is now a region, commonly called Basilicata; area 3,856 sq. m.; pop. 602,000.

**Lucas, EDWARD VERRALL** (1868-1938). British writer. Kinsman of Lister, he was of Sussex Quaker stock, and at 16 was apprenticed to a Brighton bookseller, proceeding to University

College, London. In 1893 he joined the staff of the *Globe* newspaper. An authority on Charles and Mary Lamb, he edited the first complete collection of Lamb's letters, 1935. Lucas, who became chairman of the publishing firm of Methuen, was a master of anthology (*The Open Road*, 1899) and a distinguished essayist. His travel books included *Highways and Byways of Sussex*, 1904, and the *Wanderer* series, beginning with *A Wanderer in Holland*, 1905. Of his fiction, *Over Bemerton's*, 1908; *Mr. Ingleside*, 1910; *London Lavender*, 1912; *Verena in the Midst*, 1920; and *Rose and Rose*, 1922, were popular.



E. V. Lucas,  
British author  
Russell

They were very much "essayist's novels," urbane and good-humoured studies of pleasant social scenes and characters, with little in the way of story or incident. He produced many amusing satirical works, and wrote with discerning appreciation on painting and painters, especially Vermeer and Constable. A regular contributor to *Punch*, he also had a weekly article, *A Wanderer's Notebook*, in the *Sunday Times*, 1924-38. His reminiscences, *Reading, Writing, and Remembering*, appeared 1932, in which year he was made C.H. Died June 26, 1938.

**Lucas, JOHN SEYMOUR** (1849-1923). British painter. Born in London, Dec. 21, 1849, he began his career as apprentice to a wood carver and sculptor, and his earliest artistic efforts were in this medium, but in 1870 he entered the R.A. schools. He first exhibited at the R.A. in 1872, was elected A.R.A. in 1886, and R.A. in 1898. He painted a fresco at the Royal Exchange, representing William the Conqueror granting the first charter to the City of London. He died May 8, 1923.

**Lucas, VRAIN-DENIS** (1818-?). French literary forger. A peasant's son, he was born in Eure-et-Loir, and, going to Paris in 1852, became assistant in a genealogical bureau. Elected a corresponding member of the archaeological society of Eure-et-Loir, he became head of a provincial library. After a prolonged study of old books, MSS., and autographs, he met Chasles, the geometrician and astronomer, who was also an enthusiastic collector, and between 1861 and 1870 sold



5th Earl of Lucan,  
British soldier  
Russell

him more than 27,000 forgeries for nearly £6,000. Lucas pretended that the documents were handed to him for disposal by an impoverished descendant of a count, a pre-Revolutionary collector. A feature in all the letters was the praise of France, and two represented that Pascal had forestalled Newton's great discovery. These were disclosed by Charles and condemned as forgeries by Sir David Brewster. At last the eyes of the French Academy were opened to the imposture, and in 1870 Lucas was sentenced, and disappeared from history. See *Literary Forgeries*.

**Lucca.** Maritime prov. of N. Italy, in Tuscany. It is bounded W. by the Gulf of Genoa, and inland



Lucca. Arms of the province

occupies the middle valley of the Serchio. Area, 555 sq. m. The prov. is hilly, fertile, and cultivated. The products are wine, oil, silk, and chestnuts. The capital is Lucca

and the chief harbour Viareggio. Lucca was incorporated in Tuscany in 1847.

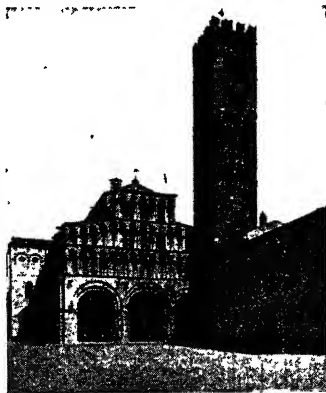
**Lucca.** City of Italy, capital of the prov. of Lucca. It stands on the river Serchio, 15 m. by rly. N.E. of Pisa. Its fortifications (1504-1649) are remarkable and well preserved. The 11th cent. cathedral is rich in sculptures, paintings, stained glass, etc.; there are many old and interesting churches and several fine palaces. The old ducal palace, now used as a town hall, contains an important picture gallery. There are remains of a Roman amphitheatre and aqueduct. The chief manufactures are silk, jute, velvet, cotton, tobacco, and olive oil. Lucca is an agricultural centre. A few miles up the valley are the famous hot baths of Lucca. First mentioned as Luca 218 B.C., it was colonised by Rome 40 years later. A bishopric from 347, it was made an archbishopric in 1726. In the Middle Ages it became an important city, and a republic from 1369 to 1797, when it was taken by the French. Napoleon made it a principality for his sister, Princess Bacciocchi, in 1805. Pop. 82,300.

**Luce, HENRY ROBINSON** (b. 1898). American publisher and editor. Born April 3, 1898, he was educated in Lakeville, Conn., and at Yale and Oxford. Until 1949 he was editor and publisher of *Time*, which he founded 1923; he began the publication of *Fortune* in 1930

and *Life* in 1936, becoming editor in chief of the group 1949. The topical film series, *The March of Time*, was started in 1935. His wife, Clare Boothe Luce (b. April 10, 1903), represented Fairfield co., Conn., in congress 1943-47. She edited *Vanity Fair*, 1933-34; wrote *Europe in the Spring*, 1935; and several highly successful plays, *Abide With Me*, 1935; *The Women*, a sensational piece with an all-female cast, 1936; *Kiss the Boys Good-bye*, 1938; *Margin for Error*, 1939.

**Luce Bay.** Extensive bay in the S. of Wigtownshire, Scotland. It penetrates inland for 16 m. and measures 18 m. across the entrance from the Mull of Galloway to Burrow Head. The quicksands along the N. and W. shores have caused many shipwrecks.

**Lucena.** Town of Spain, in the prov. of Córdoba. It stands on the river Cascajar, 37 m. by rly. S.E. of Córdoba. There are manufactures of bronze lamps, pottery, especially *tinajas* or oil and wine jars, wine, and brandy. A famous breed of



Lucca, Italy. Campanile and façade of the cathedral of S. Martino

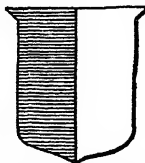
horses is reared in the dist., in connexion with which there is a yearly fair. Pop. 23,000.

**Lucera** (anc. *Luceria*). City of Italy, in the prov. of Foggia. It stands in a plain 12 m. by rly. W.N.W. of Foggia, and is dominated by a castle founded by the emperor Frederick II early in the 13th cent. and rebuilt about 1280. It has a Gothic cathedral and a town hall containing antiquities. Silk is the chief manufacture. The city was destroyed by Constans II in 663, but was restored in 1223 by Frederick II. Pop. 17,000.

**Lucerne** OR ALFALFA (*Medicago sativa*). Species of medick (*q.v.*). It is a deep-rooted perennial leguminous plant, with racemes of

purple flowers. When sown by itself, or with a corn crop, it stands for several years, and is tolerant of thin, calcareous soils, for its roots strike down into the cracks of the underlying rock. It is sometimes made into hay, but is most valued for fattening stock, being cut in the green state and given to cattle and sheep.

**Lucerne** (Ger. *Luzern*). Central canton of Switzerland. It is situated in the basin of the Aar, other rivers being the Reuss and Emme. Its surface is mountainous, especially in the S. section, the highest peak being the Brienzer Rothhorn, 7,714 ft.



Lucerne. Arms of prov. and town

The canton contains the lakes of Sempach and Baldegg, with part of Lake Lucerne. The valleys are fertile, and many cattle are raised. There is a large trade in agricultural produce, chiefly butter and cheese. The inhabitants are mainly German-speaking and Roman Catholic. Lucerne threw off the Austrian yoke and joined the Swiss confederation in 1332. Area, 576 sq. m. Pop. 206,608.

**Lucerne** (Ger. *Vierwaldstättersee*, i.e. lake of the four forest cantons). Lake of Switzerland. It is enclosed by the cantons of Lucerne, Schwyz, Uri, and Unterwalden. It is one of the most beautiful of the Swiss lakes, largely because of its irregular shape. Its length is 23 m. and its breadth varies from one half to 2 m. Its greatest depth is 701 ft., and its alt. 1,434 ft.; its area is 44 sq. m. The promontories that jut into it make it subject to sudden changes of wind and violent storms. Among the prominent landmarks are the peaks of Rigi, Pilatus, and Great Mythen. The first steamboat was put on the lake in 1835. The Reuss flows into it at its S.E. end and emerges at the N.W. corner. The lake of Lucerne is closely associated with the beginnings of Swiss history. During the Second Great War, the Swiss government's gold reserves were placed in watertight cylinders and sunk in the lake to protect them in the event of the country being drawn into hostilities. Arrangements were also made for similar storage of emergency food supplies. See *Switzerland*; *Tell*.

**Lucerne.** City of Switzerland, capital of the canton of Lucerne. It stands on the N.W. arm of Lake





Lucerne. Map of the lake of Lucerne and the neighbouring country

Lucerne, at the point where the river Reuss leaves it, 59 m. by rly. S.E. of Basel and 25 m. S.S.W. of Zürich. Dominated by the Rigi and Pilatus (q.v.), it is partly enclosed by well-preserved walls with nine watch-towers, built in 1385. There are seven bridges, two of them roofed and decorated with paintings.

With fine quays and hotels, Lucerne is deservedly one of the chief tourist centres of Switzerland. The principal church, S. Leodogar or Ledger, was part of a Benedictine monastery rebuilt about 1633-35, and has a fine old organ. The town hall, which dates in part from the early 16th cent., contains the cantonal museum, with historical relics; there is also a museum of Peace and War, and in the Glacier Garden is the Lion of

Achille, Luchaire devoted himself to historical research, and after spending ten years as professor at Bordeaux, took in 1889 a chair at the Sorbonne, Paris. He died Nov. 14, 1908. Medieval history, French and Papal, was the subject of his lifelong study, and its first results

Lucerne. A picturesque place, alt. 1,500 ft., it is said to be named after its old water tower, which was once a lighthouse (*lucerna*). The city is first mentioned in 840; it came under the Hapsburg dominion in 1291, and joined the confederation in 1332. The pop. is mostly German-speaking and Roman Catholic and numbers 54,716.

**Luchaire**, **ACHILLE** (1846-1908). French historian. Born in Paris, Oct. 24, 1846, and baptized as Denis Jean

graceful style Luchaire wrote two volumes of Ernest Lavisse's *Histoire de France*.

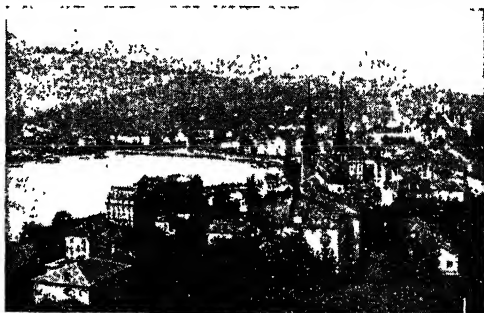
**Luchu Islands**. Alternative name for the Riukiu Islands, Japan (q.v.).

**Lucian** (c. A.D. 120-180). Greek satirist. He was born at Samosata, on the Euphrates, in Syria. Though



Lucian, Greek satirist. From a bust

Greek was not his mother tongue, he wrote Greek prose reminiscent of the best period of Greek literature. According to his own account he was apprenticed as a youth to a sculptor, but he became a travelling rhetorician, giving lectures and teaching in various cities in Asia Minor, Greece, Italy, and Gaul.



Lucerne, Switzerland. 1. General view from the east. 2. Axenstrasse, the road by the lake hewn in the mountain side. 3. Schweizerhof Quai and promenade, looking toward the Hofkirche, or church of S. Leodogar

He settled for some time at Antioch, then at Athens, and towards the end of his life received an official appointment in Egypt, where he died.

A sceptic by temperament, Lucian tilted against old faiths, philosophies, and conventions in the most audacious manner. His varied writings, grave as well as gay, afford a valuable picture of the manners of his age. To the modern reader he is one of the most entertaining of the ancient writers. Some of his most brilliant and diverting *jeux d'esprit* are cast in the form of dialogue, such as the *Dialogues of the Dead*, the *Dialogues of the Gods*, and the *Dialogues of the Courtesans*. In several of his pieces there are interesting references to Christianity. His *True History*, which was written to travesty the artificial romances of the period, anticipates such works as *Gulliver's Travels*, *Rabelais' Voyage of Pantagruel*, and *Cyrano de Bergerac's Journey to the Moon*. There are translations of his works by H. W. and F. G. Fowler, 1905; T. Francklin, 1780; and W. Tooke, 1820. See *Golden Ass*.

were seen in his works on the early institutions of France. His great work, however, is his elaborate study of the life and times of Pope Innocent III, in six parts, tracing minutely the ramifications of that pontiff's ambitious and world-wide policy. In his clear and



**Luciani, SEBASTIANO** (1485–1547). Italian painter, also called Sebastiano del Piombo. Born at Venice, he studied under the Bellini and Giorgione, and about 1512 went to Rome, where he decorated the new Farnesina Palace with frescoes. At Rome he formed a strong friendship with Michelangelo, and collaborated with that artist with a view to driving Raphael from the field. With Michelangelo as composer and designer and Luciani as colourist of a picture, the plan nearly succeeded. Works by Luciani which were designed by Michelangelo include the Flagellation and Transfiguration, in the church of S. Pietro in Montorio, Rome, and the Raising of Lazarus, in the National Gallery, London. He excelled also as a portrait painter. After the death of Raphael he became Pope Clement VII's favourite painter.

**Lucifer** (Lat., light-bringer). Name given to the planet Venus as the morning star; in mythology, the son of Aurora. In the O.T. (Isa. 14, v. 12) it is found as the translation of a Heb. word, *hēlēl*, which means literally "shining one." The term is used here as an epithet of the king of Babylon, and must really denote a waning luminary, perhaps the moon in its last quarter seen at dawn. A misinterpretation of this passage in connexion with Luke 10, v. 18, Rev. 9, vv. 1–11 led to the identification of Lucifer with Satan. See Devil.

**Lucilius, GAIUS** (c. 180–103 B.C.). A Roman satirist. Born at Suessa Aurunca, in Campania, a member of the equestrian order, the wealthy middle class of Rome, Lucilius was conspicuous in society but took no part in political affairs. He was a friend of Laelius the Wise and of Scipio Africanus the Younger, and served under the latter in the Numantine War. His comments on men and things were set down in 30 books of *Sermones* (talks), but all his works have been lost, with the exception of fragments surviving in later writers. These confirm the high estimation in which he was held by his own and immediately succeeding generations. Horace expressly men-

tions him as his model in this kind of poetry. Lucilius's writings, giving a descriptive account of contemporary life cast in hexameter verse, and interspersed with pungent criticism, constituted a new form of literature, and one which was a purely Latin invention.

**Lucina.** In Roman mythology, goddess of light and patroness of childbirth. She was often confounded with Juno and Diana, who also were patronesses of childbirth. See Hera; Juno.

**Lucius.** Name of three popes. Lucius I spent part of his eight months' papacy (253–254) in exile. Lucius II, a Bolognese, was

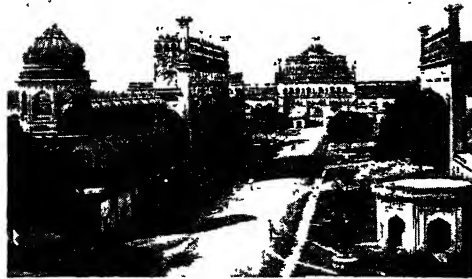
also dyeworks and other manufactures. Here in the Middle Ages was a monastery. A village in the time of Frederick the Great, it became a town in 1808.

**Lucknow.** Division and district of India, in the Oudh section of the Uttar union. The division lies between the Ganges and Gogra rivers, and includes the district of Lucknow drained by the Gumti river and the adjacent districts of Unao and Bara Banki. The whole area forms a part of the treeless, stoneless plain of the Ganges and is almost perfectly level throughout, sloping on an average less than a foot per mile, in a general

north-west to south-east direction. There are usually three harvests annually; in the spring, wheat, grain, barley; in the rainy season, rice and millet; and in the autumn, native food grains. The district is fertile and highly cultivated, except in

the large and barren sandy tracts near the rivers. Communications are easily maintained by the railways and roads, but the rivers are of little value for traffic. Railways radiate from Lucknow city. At least 80 p.c. of the people are Hindus. Division: area, 12,002 sq. m., pop. 6,530,932. District: area, 967 sq. m., pop. 949,728.

**Lucknow.** City of India, joint headquarters with Allahabad of the government of the Uttar union. Lucknow is the tenth most populous city in India and has the seat of the provincial legislature. Notable monuments include the Imambara or mausoleum of Asaf-ud-daula, the Jamá Masjid, the Chattr Manzil palace, the Kaisar Bagh, and the Farhat Baksh. Most of the city lies on the right bank of the Gumti. Among modern institutions the Canning and Mar-

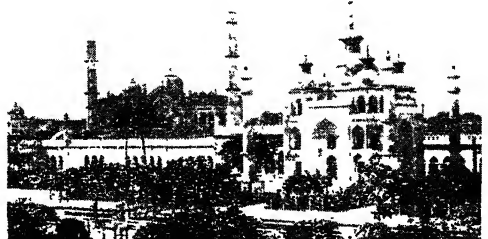


Lucknow, India. Ruins of the British residency, destroyed in the Indian Mutiny. Top picture, the Machi Bhawan fort, evacuated by British troops early in the siege

pope 1144–1145, a stormy period in which a revolutionary republic tried to remove the pope's temporal power. Lucius III, a Cistercian of Lucca, succeeded Alexander III, 1181–1185. Dissensions in Rome forced him to spend over three years in exile. His synod at Verona (1184) anathematized heretics. He died preparing a crusade, 1185.

**Luck.** Polish form of the name of the Russian town Lutsck (*q.v.*).

**Luckenwalde.** Town of E. Germany, in the *Land* (former Prussian prov.) of Brandenburg. It stands on the Nuthe, 31 m. S. of Berlin. It was a centre of the textile industry, and had



Lucknow, India. View from Huseinabad Terrace; left, mausoleum of Asaf-ud-daula; right, Huseinabad mosque

tière Colleges are notable; so too are the chief court, the legislative buildings, the museum, and Lucknow university (founded 1920).

Lucknow rose to importance in 1732 as the capital of the nawabs of Oudh, and became the storm centre of the mutiny of the Bengal Army of 1857. Lucknow still bears traces of that tragedy. The ruined residency, the heroic defence of which is commemorated by a memorial cross, was preserved as a monument and over it the Union Jack flew day and night until Aug. 15, 1947, when it was hauled down at the request of the government of the newly formed dominion of India. Industries include the manufacture of luxuries in silver, gold, ivory, silk, muslin, and glass. Railway workshops, cement and lime works, motor car works, and a paper mill have contributed to the city's prosperity. The offices of the Pioneer, formerly published in Allahabad, were moved here in 1931.

**Lucknow, SIEGE OF.** Incident of the Indian Mutiny, 1857-58. Sir Henry Lawrence had foreseen the revolt of the Sepoys, and when it broke out, on May 30, 1857, he had already fortified and provisioned the residency or Government compound at Lucknow. Thither on July 2 he retired, with all the European inhabitants and the small garrison of 300 British soldiers, 36 volunteers, and a few hundred loyal Sepoys. On that day the siege of the residency by the mutineers began, and two days later Lawrence died of a shell-wound. For over 80 days the siege continued, the little garrison performing prodigies of valour, and, thanks to Lawrence's judgement and foresight, kept the mutineers at bay. Then on Sept. 25 Sir Henry Havelock and Sir James Outram, with 2,500 men, broke through and reached the residency, of the defence of which Outram then took command.

On Nov. 10 Sir Colin Campbell, who had advanced from Cawnpore with 5,000 men and 30 guns, relieved the Alum Bagh, and the residency, Nov. 16, but his force was not sufficient to dislodge the rebels from the city, so he took away the beleaguered garrison with its women and children. By Jan. 1858, the rebels had strongly fortified Lucknow, but two months later Campbell began the siege, and by March 19 the whole city had fallen into British hands. See Lucknow and Oudh in the Mutiny, J. J. McL. Innes, 1895.

**Lucretia.** In Roman legend, wife of Lucius Tarquinius Collatinus. During the siege of Ardea



Lucknow. *Jessie's Dream.* It is said that during the siege of Lucknow, Jessie Brown, a corporal's wife, heard in a dream the bagpipes of the relieving force and heartened the beleaguered garrison to hold out until Sir Colin Campbell arrived

From the picture by Fred. Goodall, R.A., in the Sheffield Corporation Art Gallery

(510 B.C.) the royal princes paid a surprise visit to their wives, all of whom were found feasting except Lucretia. Sextus Tarquinius, son of King Tarquinius Superbus, inflamed by her beauty, forced her to yield to his desires. On the following day Lucretia stabbed herself in the presence of her father and her husband. Junius Brutus, cousin of Tarquinius, seized the dagger and raised it as a standard of revolt. The Tarquins were driven from Rome and the monarchy was overthrown.

**Lucretius** (c. 98-55 B.C.). Roman poet and philosopher, whose full name was Titus Lucretius Carus. He was a contemporary of Cicero and Caesar, but hardly anything is known of his life, although his great philosophic poem in six books, *De Rerum Natura* (On Nature), ranks as one of the world's masterpieces. *De Rerum Natura* is an attempt to express the author's system of Epicurean philosophy and thus to afford his fellow-men a rational explanation of life and matter destined to free them from the terrors and cruelties springing from superstition and ignorance, especially, in his view, from belief in divine intervention. Hence he inquires into the causes of the most alarming natural phenomena. Intensely earnest, he is animated by pity for the self-torturing human race.

The poem suffers considerably from the fact that Lucretius is a philosopher first and a poet second. Except for the hexameter form, many passages where the author is attempting to explain some phenomenon or drive home some truth are indistinguishable from prose. Yet the general conception is in so lofty a plane that the reader never loses sense of the presence and in-

spiration of a great creative mind, while a vein of noble poetry runs through the whole structure, and in certain parts, especially where he broods over the great mysteries of life and death, Lucretius rises to heights touched by no other Roman poet. The hexameter in his hands did not reach the perfection to which Virgil brought it, yet it has a strength and stateliness which accord well with the subject.

Though Lucretius was not a scientist in the modern sense, it is astonishing how many of the theories he propounds anticipate the discoveries of modern times. His conception of the phenomenon of light was in advance of Newton; his notion of the atomic constitution of matter accords with the results of the last analyses of modern physics and chemistry; while his famous account of the origin of life and the development of human society anticipated the doctrine of evolution. See Lucretius (text, commentary, and translation), H. A. J. Munro, 1908; Roman Poets of the Republic, W. Y. Sellar, new ed. 1881; Latin Literature, J. W. Mackail, 1895.

**Lucrino** (Lat. *Lacus Lucrinus*). Small lagoon of Italy. It is about 13 m. W. of Naples and  $\frac{1}{2}$  m. S. of Lake Averno (*q.v.*), and is separated from the Gulf of Pozzuoli by a dyke. Much larger in Roman times, the volcanic upheaval of Monte Nuovo (alt. 455 ft.) on Sept. 30, 1538, half filled the lake and destroyed the harbour, Portus Julius, built by Agrippa, and the canal connecting it with Lake Averno. Famed then, as now, for its oyster beds, its banks were studded with Roman villas, including Cicero's Academia. The Via Herculeia, an ancient embankment, can be seen below the surface.

**Luculi.** Irregular specks of light covering the surface of the sun. They were first noted by Short, the optician, during the eclipse of July 14, 1748. They gave to the sun, according to Short, a mottled appearance like the skin of an orange; and it seems not unlikely that Short perceived what are now called granulations. See Sun.

**Luculia gratissima.** Evergreen shrub of the family Rubiaceae. A native of the Himalayas, it has opposite, elliptic leaves, and rosy, tubular, fragrant flowers in large clusters at the end of the shoots.

**Lucullus, LUCIUS LICINIUS** (c. 110–57 B.C.). Roman soldier and epicure. He served in the Social War (90–89), and again under Sulla in the first Mithradatic War (88–84). In the third Mithradatic War, which began in 74, he was in chief command for some eight years. He conducted his campaigns with great military skill, and succeeded in driving Mithradates out of his kingdom of Pontus. In 69 he defeated Tigranes, king of Armenia, with whom Mithradates had taken refuge, but he penetrated too far into Mesopotamian Armenia, and, his soldiers becoming disaffected, he was compelled to return to Asia Minor.

In 66 Lucullus was superseded by Pompey, and devoted his retirement to the gratification of his luxurious tastes by means of the vast wealth he had amassed in Asia. He was, however, a generous patron of art and letters, and collected a fine library, which he freely threw open to the use of those likely to benefit by it. His gardens on the Pincian Mt. and his villas at Tusculum and Neapolis were famous. The splendour of his banquets became proverbial. He is said to have introduced the cherry from Cerasus. There is a *Life of Lucullus* by Plutarch.

**Lucy.** Name of an English family. It traces descent from Thurstone de Cherlecote, whose son Walter was given the village of Charlecote in Warwickshire c. 1190. Sir Thomas Lucy (d. 1600), who rebuilt the manor house there, was knighted by Elizabeth in 1565. High sheriff for his county, he is interesting mainly for his alleged association with Shakespeare; according to a story current at Stratford about 1585, Shakespeare stole deer at Charlecote, was prosecuted by Lucy, and fled to London, where he took his revenge by satirising the knight



*Luculia gratissima.* - Leaves and flower-head of this Indian shrub

as Justice Shallow in King Henry the Fourth. In 1947 Sir Henry Montgomerie Fairfax-Lucy, 4th bart., presented Charlecote to the National Trust.

**Lucy, SIR HENRY WILLIAM** (1845–1924). British journalist. Born Dec. 5, 1845, at Crosby, and educated in Liverpool, he was apprenticed to a merchant. Beginning his journalistic career as chief reporter of *The Shrewsbury Chronicle*, he studied at the Sorbonne,



Sir Henry Lucy, British journalist  
Russell

Paris, and became the best known parliamentary press writer in England, contributing to leading London, provincial, and American papers. His chief work was done for the *Daily News* from 1873, and Punch, of which he was Toby, M.P., contributing *Essence of Parliament*, from 1881 until 1916. Lucy made parliamentary reporting amusing as well as informative, is believed to have originated lobbying, and was the author of numerous books on the parliaments and parliamentarians from 1880. He gave two sums of £1,000, one in 1903 to found the Lucy Trust for the aid of gallery men in temporary need, and the other in 1913 to endow a bed in the London Hospital for parliamentary journalists. He was knighted in 1909, and died Feb. 20, 1924.

**Luddites.** The name given to bands of rioters who appeared in the midland counties of England in 1811. Industrial distress was acute, and bodies of unemployed went about breaking machinery, which they regarded as the cause of their misfortunes, especially in Notts and Leicestershire. The riots continued in 1812 and broke

out again in 1816, extending into Lancs, Yorks, and other parts of the country. By accident the rioters became known as Luddites, a mentally deficient boy named Ned Ludd, living in a Leicestershire village, giving his name to the movement. The story goes that, when annoyed by some other boys, he chased one of them, and, failing to catch him, in his anger destroyed some stocking frames. When others were destroyed by the rioters, it became usual to put the deed down to Ludd, while the leader of a band called himself General Ludd. See *Industrial Revolution*; consult *Risings of the Luddites, Chartists, etc.*, F. Peel, 1888.

**Ludendorff, ERICH VON** (1865–1937). German soldier. He was born April 9, 1865, entered the army from a cadet school, 1882, and served on the general staff 1898–1914, working from 1904 in the operations section which planned the German attack on France through neutral Belgium. As a maj.-gen. on the staff in the 2nd army, he received the surrender of Liège in Aug., 1914 (see Leman, G.M.J.G.; Liège). On Aug. 22 he became chief of staff to Hindenburg (q.v.) on the Russian front, where he was mainly responsible for the German victory at Tannenberg and for the successes of 1915. After the attack on Verdun (1916), which he had opposed with Hindenburg, who feared a failure, he and Hindenburg were placed in virtually supreme command of all German forces, Aug. 29, 1916. Ludendorff organized the army and devised new methods of attack. He proved himself a bold strategist, but with great talent rather than genius; cold and heartless, lacking that deeper insight which marks the supreme leader. At the end of Sept., 1918, when the German army was facing defeat, he called for immediate peace negotiations, but when these were eventually opened he refused his consent, and was dismissed, Oct. 28, 1918.



E. von Ludendorff, German soldier

After the war he wrote his *War Memories*, 1919; *The General Staff and its Problems*, 1920; and *Warfare and Politics*, 1922. He was involved in several nationalist risings, and on Nov. 11, 1923, marched with Hitler in

the unsuccessful *putsch*. But later a coolness developed between Hitler and himself, and he played little part in public life. Occasionally he attacked his former chief Hindenburg, and was a bitter opponent of the Christian church, declaring himself to be a pagan. He died at Munich, Dec. 20, 1937. *Consult* Life, L. Buat, 1920.

**Lüderitz Bay.** A port of S.W. Africa. It is the principal port of Namaqualand. Originally named Angra Pequena by Bartholomew Diaz, who landed there in 1486, it was renamed after a German, Adolf Lüderitz, who founded a settlement there in 1883. Situated 150 m. N. of the mouth of the Orange, in a sterile and arid region, the town owes its existence to a rich diamond field, and has fish canning factories. It has no natural water supplies, being dependent upon that brought by train from Garub, 65 m., supplemented by distillation of sea water. An average of 100 ships enter and clear Lüderitz annually, handling some 16,000 tons of cargo, mostly imports. Pop. 23,500.

**Ludgate.** Gate of old London. It stood on the W. side of the wall, near to the Old Bailey. According to tradition it was built 66 B.C. by King Lud, but, that monarch being more or less mythical, its name is derived by modern authorities from a Saxon word meaning postern. First mentioned in 1100, it was repaired in 1215 and 1260, rebuilt 1586, and restored after the Great Fire. It was a debtors' prison 1378-1419, was held for Queen Mary by Lord William Howard against Sir Thomas Wyatt in 1554, and was demolished in 1760. Its statue of Elizabeth was removed to a niche in the outer wall of S. Dunstan's-in-the-West, Fleet Street.

**Ludgate Hill.** A London thoroughfare. It extends E. from Ludgate Circus, where it is crossed by a rly. viaduct, to S. Paul's Churchyard. At one time the name applied only to the part from the Fleet Bridge to the old gate; the extension from the gate to S. Paul's Churchyard being first called Bowyer Row and then Ludgate Street. It was widened in 1864, when Ludgate Circus was formed, and in 1893. On the N. side the church of S. Martin, built by Wren in 1684, replaced a structure dating from 1437 and destroyed in the Great Fire. Samuel Purchas (*q.v.*) was rector in 1613. Ye Old London Coffee House tavern, marking, approxi-



Ludgate Hill, London. View looking east, showing S. Paul's Cathedral and the spire of S. Martin's

mately, the site of the old gate, succeeded the London Coffee House, 1731-1867, once kept by the grandfather and then by the father of John Leech (*q.v.*), the caricaturist, and a meeting-place for London publishers. On the S. side are the shops of several religious book societies. Bombs created large gaps on both sides during the Second Great War. The viaduct was hit, and wine vaults in the arches below were seriously damaged. Incendiary bombs destroyed the premises of Cassell and Co., and Treloar's carpet warehouse was among the shops that disappeared. The roof of Stationers' Hall, in Stationers' Court, was burnt. *See* La Belle Sauvage; *consult also* Ludgate Hill Past and Present, W. P. Treloar, 2nd ed. 1892.

**Ludhiana.** Dist. and town of India, in the Jullundur division, Punjab state. The district lies S. of the Sutlej in the E. of the state; three-quarters of it is cultivated, and yields wheat and grain. There is a little irrigation from one of the branches of the Sirhind Canal. Most of the people are hard-working Jats. Area, 1,452 sq. m. Pop. 800,000.

The town, which is 110 m. E.S.E. of Lahore, is an important rly. junction in the centre of the dist., with a large trade in wheat; it specialises in the manufacture of textiles, particularly Kashmir shawls and turbans. Pop. 111,000.

**Ludi.** A Latin word meaning games; also applied to athletic training institutions and educational and art schools (music, rhetoric, reading, and writing).

Roman games may be classed as private or public, provided by individuals to gain public favour or commemorate events in their lives; regular or extraordinary; circus, amphitheatre, or theatrical. The games were in their origin essentially religious. Twice a year (March 14, Dec. 15) chariot and horse races, under the superintendence of the pontifex maximus, were held in the valley between the Aventine and Palatine hills in honour of Mars and Consus, the patron deities of horses. Later, these were supplemented by *ludi scenici*, dramatic performances introduced from Etruria. From an early date games were celebrated in honour of Jupiter by triumphant generals on their return from a campaign. These *ludi Romani*, or Roman games, later developed into a yearly festival, even if no triumph justified them. Superintended by the curule aediles, they at first lasted only one day (Sept. 15), but afterwards extended over 14 or 15 days.

The *ludi plebei*, or plebeian games (220 B.C.), held by the plebeian aediles in the Circus Flaminius, were supposed to commemorate the secession to the Sacred Mount. The *ludi Apollinares* (212), held by the city praetor, were introduced in honour of Apollo during the 2nd Punic War, it having been predicted that the Carthaginians would never be driven out of Italy until the god had been so honoured; the *ludi Megalenses*, or games in honour of the Great Mother of the Gods, were instituted (204) with the same object, on the removal of the sacred stone, supposed to represent the goddess, from Pessinus, in Phrygia, to Rome. Other games were held in honour of Ceres, Flora, and other divinities.

The *ludi saeculares*, or secular games, established in early republican times in obedience to the Sibylline books, were held at intervals of 100 to 110 years. They lasted three days and three nights, the most magnificent celebration being in the reign of Philip the Arabian (A.D. 247), to commemorate the 1,000th anniversary of the foundation of Rome. These games were managed by certain officials, called "the fifteen" (originally two), who had the care of the Sibylline books. A famous ode of Horace was written on the occasion of these games during the reign of Augustus.

**Ludlow.** Semi-mechanical type composing machine. It differs from other slug-casting machines, such

as the linotype (*q.v.*) and intertype, in that it is not operated by means of a keyboard. The matrices required for the casting unit are assembled and spaced by hand.

The compositor gathers about three to eight matrices in the order required and places them in the Ludlow stick at one operation. The speed of assembling in this way is appreciably quicker than setting type by hand. Having placed all the matrices for the line in the stick, spaces are inserted between the words, and this process is facilitated by the standard widths of the spaces and corresponding markings on the assembly stick. The stick containing the line of justified matrices then becomes the mould for casting. It is placed in a groove on the top of the machine and locked in position. A lever starts the mechanism whereby the mould moves to the casting position, molten metal is pumped into it, and the slug is cast. The stick is then removed from the machine and the matrices distributed back into the cases. Meantime, the slug is trimmed by the machine and finally delivered on to a galley. The metal employed is the same alloy of lead, antimony, and tin that is used by other slug-casting composing machines.

**Ludlow.** Mun. borough and market town of Shropshire, England. It stands on the Teme, where it is joined by the Corve, 27 m. S. of Shrewsbury, with which it has rly. connexion. Interest in the town is mainly historical. The church of S. Lawrence is a cruciform building in the Perpendicular style, and there is a grammar school founded in the 13th century. The castle ruins include the Norman keep, the council hall, Mortimer's Tower, and a Norman chapel. Broad Gate, one of the town gates, still stands. Of the old houses the most notable is the Feathers Inn.

Ludlow grew up around a castle built by the Normans, and was an important place on the marches of Wales. It became a borough, and was separately represented in parliament from 1471 to 1885. The court of the marches held its meetings here until its abolition about 1700. The castle, the residence of the president of the marches, was destroyed after its capture in 1646 by the parliamentarians. Ludlow is one of England's most beautifully situated towns. It gives its name to a county constituency. Market day, Mon. Pop. 8,123. See Inn.

**Ludlow, EDMUND** (c. 1617-92). English politician and author. Born of a Wiltshire family, the son



Edmund Ludlow,  
English politician

of Sir Henry Ludlow, he was educated at Trinity College, Oxford. When the Civil War broke out, he joined the parliamentary army, was made governor of Wardour Castle, and after its surrender saw service in the field. In 1646 he entered parliament for Wiltshire. He favoured Pride's Purge, was a member of the court that tried Charles I, and signed the death warrant. A member of the council of state, he went to Ireland in 1651, and was for about a year in command there. He appeared next as an opponent of Cromwell. In 1659 he re-entered parliament, sat on the council of state, and went as commander to Ireland. At the Restoration, Ludlow was turned out of the Convention parliament, and as one of the regicides was condemned, but escaped to Switzerland, where he died.

**Ludlow, JOHN MALCOLM** (1821-1911). British lawyer. Born in India, March 8, 1821, he was educated in Paris, and became a barrister, Lincoln's Inn, 1843. A Christian Socialist, he helped secure the passing of the Industrial and Provident Societies Acts, 1852 and 1862. He was registrar of friendly societies, 1874-91. He died Oct. 17, 1911.

**Ludlow Group.** In geology, the uppermost subdivision of the

Silurian rocks in Great Britain. They consist mainly of shales, passing gradually into the Old Red Sandstone. The group is so called from its typical development near Ludlow. It abounds in fossils, notably *Cyathaspis ludensis*, the earliest British vertebrate fossil, trilobites, brachiopods, gastropods, etc. See Silurian.

**Ludwig.** German form of the masculine Christian name better known by its French form Louis (*q.v.*).

**Ludwig, EMLL** (1881-1948). German-born Swiss dramatist and biographer. Of Jewish stock, his real name being Cohen, he was born at Breslau, Jan. 25, 1881. Educated at the university there and at Heidelberg, he made an early reputation as a writer of verse plays. Of his later pieces, *Versailles*, produced in London 1932, contained portraits of Lloyd George and Clemenceau. After the success of his *Goethe*, 1920, Ludwig devoted himself chiefly to biography, dealing with Napoleon, 1925; Bismarck, 1927; Lincoln, 1930; Hindenburg, 1935; Beethoven, 1945. *Gifts of Life*, 1931, was autobiographical. The Germans, 1942, was much discussed. A Swiss citizen from 1932, Ludwig died Sept. 17, 1948.

**Ludwig, KARL FRIEDRICH WILHELM** (1816-95). German scientist. Born at Witzenhausen, Hesse, Dec. 29, 1816, he studied physiology at the universities of Erlangen and Marburg. He became professor at Marburg in 1846; in 1849 he went to Zürich, and in 1855 to Vienna. From 1865 he was professor of physiology at Leipzig, where he died April 23, 1895. Ludwig is known for his discoveries in regard



Ludlow, Shropshire. Ancient stronghold of the English border, Ludlow Castle stands nobly on a hill above the junction of the rivers Corve and Teme



to the movements of the blood and lymph, for his invention of the kymograph, mercurial blood-pump, and other apparatus for conducting experiments. His chief work is a Text Book of Human Physiology, 1852-56.

**Ludwig, Otto** (1813-65). German author. Born Feb. 11, 1813, at Eislefeld, in Saxe-Meiningen, he struggled against illness and poverty. Like Hebbel a pioneer of realism, he published two powerful tragedies, *The Hereditary Forester*, 1853, and *The Macca-bees*, 1855, distinguished by masterly technique and vigorous character drawing. Of his tales, *Between Heaven and Earth*, 1857, is the most famous. His *Shakespeare Studies*, 1871, illustrate his theories of dramatic composition. Ludwig died Feb. 25, 1865.

**Ludwigsburg.** Town of Württemberg-Baden, W. Germany, 9 m. N. of Stuttgart, near the Neckar.

The chief building is the palace, formerly the residence of the rulers of Württemberg; it is a magnificent edifice in a fine park; others are churches and buildings used for public purposes. Ludwigsburg was founded in 1704.



Ludwigsburg, Germany. Schloss Solitude, in the environs of the town formerly a military school which Schiller attended in 1773-75

when Eberhard Louis, duke of Württemberg, in a fit of pique, decided to leave Stuttgart. A town grew up around his new palace and his successors added to its buildings. It became also the military centre of Württemberg and later a thriving industrial centre, with textile, metal, surgical instrument, food etc., factories, and a spa. Near the town is the hunting lodge of Monrepos, also, until 1918, a residence of the king of Württemberg. Pop. (pre-war) 34,135.

**Ludwig's Canal.** Inland waterway of Bavaria, Germany. It was built, 1836-45, under Ludwig I of Bavaria and named after him, and links the Danube with the Main, and thereby the Black Sea with the North Sea. Utilising the Regnitz and the Altmühl, tribs. respectively of the Main and the Danube, and with over 100 locks, it was only 5 ft. deep and 108 m. long. Part of it was incorporated in the huge Rhine-Main-Danube Canal started 1926, still incomplete 1939, which, with only 24 locks, admits ships of 1,200 tons and produces electric power on a large scale.

**Ludwigshafen.** Tn. of Rhineland-Palatinate, W. Germany. On the left bank of the Rhine opposite Mannheim, it developed rapidly. Though founded in 1606 as a fortified bridgehead, it received its present name only in 1843, and urban rights in 1859. Its pop. increased from 3,900 in 1864 to 108,000 in 1950. Originally a trading centre for grain, coal, fertilisers, iron, etc., it became a thriving centre of the chemical industry, the German Dyestuffs federation, later merged in the I. G. Farbenindustrie, having been established in 1865. Over 20,000 workers were employed in the factories, producing explosives and other chemical products, and metal, textile, wood, and other factories were built. The port, with 6 basins, received more than 12,000 vessels a year. The town was a good example of planned building and had wide streets.

During the First Great War it was attacked by air, and during the latter stages of the Second was almost destroyed. It was taken by armoured units of the U.S. 3rd army, March 21, 1945, and was included in the French zone of occupied Germany.

**Ludwigslust.** A town of the Land of Mecklenburg, E. Germany, in Russian occupation after Germany's surrender in 1945. It is 27 m. N.N.W. of Wittenberge, being a rly. junction on the Berlin-Hamburg line. The manufactures include cloth and chemicals, and the buildings two palaces and several churches. "The pleasure of Louis," the town grew up around the palace built in 1770-80 by Frederick II, grand duke of Mecklenburg-Schwerin, in honour of his father, Christian Louis. Another royal palace was erected, and the grand dukes had residences here until the changes of 1918. Pop. (1950) 14,000.

**Luff.** Side of a ship next the wind; the forward, or weather, edge of a sail. To luff is to bring a

vessel's head nearer to the wind; to luff up is to throw her head right into the wind.

**Lufthansa** (Ger.). Abbreviation of Deutsche Lufthansa (German air union). Founded in 1926, to maintain a daily air mail and passenger service between Weimar and Berlin, Lufthansa eventually operated all air transport services over German territory and had controlling interests in the German Chinese company Eurasia and the Brazilian Condor syndicate. It was a pioneer in the use of the multi-engined, all-metal, commercial monoplane; and established the first regular air service across the S. Atlantic. Lufthansa introduced the ocean seaplane-tender with the Westfalen, a ship stationed in the S. Atlantic midway between Bathurst (Gambia) and Pernambuco (Brazil) for refuelling aircraft. It also initiated the catapulting from Atlantic liners of aircraft carrying urgent mail. The Bremen and Europa were so fitted, enabling letters to arrive in Bremen or New York one day ahead of the ship. Lufthansa operated 80 separate European services and 10 S. American.

**Luftwaffe** (Ger., air weapon). The existence of the German air force, known under this name, was admitted by Hermann Goering (g.v.), its first c-in-c., in a proclamation of March, 1935. This was a direct contravention of the provisions of the Versailles treaty, which laid down in 1919 that the defeated German nation should have no military or naval air force or personnel, and restricted the size and numbers of its civil aircraft.

Even in pre-Nazi days much ingenuity went to the secret building up of air strength. There was an air intelligence department at the defence ministry from 1922, and an international air agreement, 1926, eliminated the restrictions on civil aviation, so that the commercial Lufthansa (*v.s.*) became the largest and one of the most efficient air line organizations in Europe. Many of its standard aircraft were clearly designed for easy conversion to military use, and as many crews as possible were trained in long-distance navigation. Another source of potential flying strength was the flourishing gliding movement, officially encouraged and developed.

As soon as the Luftwaffe openly ranged itself among the world's fighting forces, Goering and his air staff, chief among them Erhard



Milch and Ernst Udet, decided to test their more promising aircraft and their tactical theories on the battlefield. Some 200 operational aircraft and 50 transports were sent to equip the Condor Legion (*g.v.*) in the Spanish Civil War. The c.-in.-c. was General Sperrle, later to command the 3rd air fleet against Great Britain. The Messerschmitt 109 fighter, Junkers 87, Dornier 17, and Heinkel 111 bombers, as well as the Junkers 52 transport, were all used in Spain, and were sufficiently successful to be put into large-scale production.

At the time of the occupation of Austria (1938) and Czechoslovakia (March, 1939), first-line strength of the Luftwaffe had reached 4,000 aircraft, and was impressive in its obvious flexibility of movement. This was to remain a feature of the Luftwaffe, in which squadrons and groups could be switched swiftly where required, thanks to the generous provision of Ju 52 aircraft.

The German air staff had decided to concentrate on the production of single-seat fighters—in which class the Me 109 long held its own—and the Dornier and Heinkel medium-size bombers, in which armament and bomb-load were sacrificed to performance. While the Luftwaffe had relatively weak opposition—particularly, as in the Low Countries, against an enemy with pitifully small air strength—this policy paid. The Ju 87, known as the Stuka (dive bomber), achieved even greater success in *Blitzkrieg* warfare, operating as the spearhead of the army's armoured attack.

#### Deficiencies of the Luftwaffe

The Luftwaffe was, in fact, designed for mobility and intimately close support of ground forces: when the German army was finally confronted in the late summer of 1940 by the English Channel, the accompanying air force, though still on the offensive, was forced to fight a different war from static bases, against a highly trained enemy with equal morale and, at close quarters, devastating fire-power. The deficiencies of the Luftwaffe began to appear; not only the poor self-protection of its bombers, but also the lack of a clear policy in its command. Great damage was inflicted, especially by the night raiders of 1940–41, but this switching from day to night attack was in itself a confession that the Luftwaffe had been halted. Even the much publicised promotions of Goering to Reichsmarschall and of

Kesselring, Sperrle, and Milch to field marshal's rank now seemed premature. (*See Air Raids; Air Warfare; Britain, Battle of.*)

Germany's next attacking moves were in the Mediterranean theatre, and for two years a bitter and fluctuating struggle was waged in the desert, with the Luftwaffe always a potent factor. This was proved especially in the capture by the Germans of Corinth and Crete, 1941, when the twin techniques of dropping troops by parachute and of towing them in gliders to battle were triumphantly justified. (*See Airborne Forces; Crete in the Second Great War.*)

#### Failing Resources

It was Hitler's insistence on the invasion of Russia that broke the back of the Luftwaffe. With his factories still geared to the production of the same basic types of aircraft—now supplemented, however, by the Focke-Wulf 190, a first-class fighter, the Me 110 and its derivatives, and the ubiquitous Ju 88—and training affected by the loss of fine leaders in action and the lack of all-round experience in large-scale static warfare, Germany could ill afford the turning of two-thirds of her entire first-line air strength on a new enemy. Moreover, although the dramatic entrance of Japan into the war provided Germany with an ally, that ally was unable to help directly, and a large U.S. air force was soon aiding the R.A.F. in harrying the Luftwaffe and its feeble shadow the Italian Regia Aeronautica.

The longest battle of the air war was in the Atlantic, with the Allied convoys being hunted and attacked by the Luftwaffe with bomb, machine-gun, and air-launched torpedo and mine. The four-engined Focke-Wulf 200 was a tremendous asset, but Germany lacked numbers in the heavy long-range class of bomber.

By Sept., 1943, the Allies were again astride the Mediterranean; and on and after D-Day (June 6, 1944), suffering from ceaseless attack, the Luftwaffe proved surprisingly helpless. The disappearance of the "air umbrella" lost Germany her defensive battles as surely as its presence had helped her in 1940.

Inventive ingenuity was far from dead in the final days of the Luftwaffe. The glider bomb found many a target in the war at sea. Most important, but too late to influence the course of the war, was the introduction of the jet-propelled aeroplane. Germany was first in this field, with the Me 262 and Arado 234 in service, while her rocket-propelled Me 163 was the fastest aircraft in any air force at that time. (*See Jet Propulsion.*)

The production programme was inevitably devoted to such defensive weapons, and Luftwaffe strategy was conditioned by the formation in 1944 of a huge home defence Fighter Command, at first numbering 3,000 first-line aircraft, then about half the total strength. In command was the veteran Gen. Stumpff, who had led the Luftwaffe in the campaign in Norway (1940). The Luftwaffe included throughout the war about 90 p.c. of the total *Flak* (A.A. defence) organization of the Reich, numbering about 1,000,000 men. This integration of anti-aircraft with the air service worked smoothly. *Consult* The German Air Force, A. Lee 1946.

G. D. H. Linton

**Lug.** In engineering, an extension or projection forming an integral part of an engineering structure, machine, or fitting. It serves as a means of attachment for another part and may be drilled for bolts, wires, etc. The name is perhaps derived from the colloquial or dialect word for ear.

**Lugano** (anc. *Ceresius Lacus*). Lake of Central Europe. It is partly in Italy and partly in Switzerland, being between lakes Maggiore and Como. Its length is about 22 m., its width 2 m., greatest depth 945 ft., alt. 899 ft., and area 20 sq. m. Of irregular shape, it is nearly surrounded by mountains, rising steeply from the lake; its W. arm is almost cut off by the promontory of Mt. Salvatore. The St. Gotthard rly. borders it and traverses it between Lugano and Capolago. Its waters are discharged by the river Tresa into Lake Maggiore. Between the villages of Bissono and Melide, S. of the town of Lugano, there is a fine bridge. A steamboat service was started on the lake in 1856.



Lugano. View of the north end of the lake, near Portezza

**Lugano.** City of Switzerland, in the canton of Ticino. On the N. shore of Lake Lugano, 15 m. by rly. S. of Bellinzona and 51 m. N. of Milan on the St. Gotthard line, it is the largest town in the canton, and was formerly one of its three capitals. Beautifully situated and sheltered by mountains—San Salvatore (3,004 ft.), Generoso (5,591 ft.)—it is Italian in scenery, architecture, and population. Lugano has fine quays, theatre, picture gallery, and an English church. S. Lorenzo, the cathedral church of the bishop of

Kong, 1907–12. Appointed governor next of both N. and S. Nigeria, he united the two in 1914 and governed for another five years. During 1922–36 he was on the League of Nations permanent mandates commission. Knighted in 1901, he was created a baron in 1928. His books include *The Rise of Our East African Empire*, 1893; *The Dual Mandate in British Tropical Africa*, 1922, in which he urged the necessity of governing through native rulers. Lugard died April 11, 1945, leaving no heir. His

Minho, 72 m. by rly. S.E. of Cornunna. Its lofty, thick walls, with numerous towers, date from about the 3rd cent., and were built by the Romans, who also built bath-houses for its celebrated sulphur springs. Lugo is an episcopal see and has a Gothic cathedral of the 12th cent., with a façade dating from the 18th. Manufactures include leather articles. Pop. 50,933.

**Lugo.** Town of Italy. In the prov. of Ravenna, it is 35 m. by rly. E. of Bologna. It has a 15th cent. castle and normally holds an important fair in September. The



Lugano, Switzerland. Left, the town from S. Lorenzo. Right, lake front at Lugano, looking towards Mt. Salvatore

Lugano, dates from the 15th cent. S. Maria degli Angioli has frescoes by Luini. Lugano became Swiss in 1512. In 1848 Mazzini made it his headquarters. It is the most important health resort and centre of banking, trade, and industry in Italian Switzerland. Pop. 17,030.

**Lugansk.** Former name of the Russian city Voroshilovgrad (*q.v.*).

**Lugard, FREDERICK JOHN** DEALTRY LUGARD, BARON (1858–1945). A British administrator.

Born Jan. 22, 1858, and educated at Rossall and Sandhurst, he joined the army and saw service in Afghanistan, the Sudan, and Burma.



Lord Lugard, British administrator

Resigning in 1888 he led a successful expedition against the Arab slave-traders in Nyasaland, being severely wounded. The British East Africa Co. made him administrator of Uganda; later he commanded forces sent to Borgu and Lake Ngami. In 1897, as commissioner in W. Africa, he raised and commanded the W. African Frontier Force (*q.v.*). He became governor of Hong

wife, Flora Shaw (*q.v.*, d. 1929) was sometime head of The Times colonial department.

**Lugg** or **LUG.** River of England and Wales. It rises in Radnorshire and flows through Herefordshire to the Wye, which it enters below Mordiford. Its tributaries include the Arrow and the Frome, and Leominster is on its bank.

**Lugger.** A craft carrying lug sails. Luggers may have one, two, or three masts. Sometimes they are also fitted with top sails. Owing to their extreme handiness luggers were formerly a favourite craft of the old-time Channel smugglers. See Boat.

**Lugnaquilla.** Mountain of co. Wicklow, Eire. It is 15 m. W. of Wicklow and attains an altitude of 3,040 ft., the highest summit in the county.

**Lugo.** Maritime prov. of N.W. Spain, bounded N. by the Bay of Biscay, and drained by the Minho. It is mountainous, and is particularly rich in copper, lead, granite, marble, and slate. An agricultural prov., it yields cattle and farm produce, besides timber and fibre, and contains many thriving towns. Area, 3,815 sq. m. Pop. 538,745.

**Lugo** (anc. *Lucus Augusti*). City of Spain, capital of the prov. of Lugo. It stands on the river

manufactures include rope and furniture, while there is a brisk trade in corn, wine, and hemp. Pop. 27,950.

**Lugos.** A town of Rumania. It is situated on the Temes, where that river leaves the mts., at the W. end of the Transylvanian Alps, and is an important rly. junction on the route from Budapest to the Danube at Orsova. Wine is the chief product. Pop. 23,674.



Lugo, Spain. Façade of the 12th century cathedral

**Lug Sail.** Fore and aft sail, with a spar along its upper side, carried across the mast. It is a common rig in boats, and easy to handle. A working lug can be let go at once to spill the wind. A dipping lug has to be lowered, or dipped, every time a tack is made. A balanced lug has a long, light boom, which makes it dangerous to use except in calm waters.

**Lug Worm.** Name often applied to the lob worm (*q.v.*). It is an annelid worm, living in burrows between the tide-marks along the seashore.

**Luini, BERNARDINO** (c. 1470–c. 1535). Italian painter. Born at Luino, Lake Maggiore, he studied under Stefano Scotto, but later adopted the style of Leonardo da Vinci (*q.v.*). His religious compositions are always tender and sometimes sickly; he lacked the virility of his great master. His best frescoes are the Life of the Virgin series in the Pilgrimage Church, Saronno, and there are others at Milan. Among his easel-pictures are several in the National Gallery, London, and many in continental galleries.

**Luke** (Gr. *Loukas*; Lat. *Lucanus*). One of the four evangelists. He is believed to have been a physician of Antioch, one of the early members of the Church of Antioch, and author of the third Gospel and of the Acts of the Apostles. A follower of Paul and his companion in his missionary journeys, he is said to have died or to have been martyred in Bithynia at the age of 74. According to tradition he was a painter, several pictures of the Virgin are ascribed to him, and he is regarded as patron saint of the fine arts. In ecclesiastical art he is represented by the ox, often winged, a symbol of sacrifice and priesthood. His festival is Oct. 18. See Acts.

**Luke, THE GOSPEL OF.** The traditional view which ascribes the authorship to Luke, the companion of S. Paul and the beloved physician, is accepted by many modern scholars, mainly on the ground that it is the theory which most satisfactorily explains the critical data of Acts.

The Gospel is dedicated to Theophilus, who was possibly a high Roman official, but there is little doubt that it was intended for the use of the Church as a whole, and especially for Gentile readers. Luke, as he tells us in the preface, obtained his information from eye-witnesses of the facts, and from written accounts. It is clear that he used Mark and the Logia (*q.v.*).

It is held by many that the section 1, v. 5 to 2, v. 52 is derived from the Virgin Mary. The Gospel, however, is not merely a compilation from earlier sources. It bears in a marked degree the impress of the writer's own personality. It shows, more clearly than any other of the Gospels, the universal scope of the teaching of Jesus. The horizon of Matthew and Mark is bounded by the confines of Palestine. The horizon of Luke stretches out to the limits of the Roman empire. Luke always exhibits an intense interest in the social aspects of the teaching of Jesus. The Gospel has often been called the Gospel of the poor and the outcast, because it lays special stress on the relations of Jesus with them. From the historical point of view its most interesting feature is the space which it devotes (nine chapters) to the narrative of the events connected with the last journey of Jesus to Jerusalem. Another remarkable characteristic of the book is the prominence which it gives to the work of women. See Gospels, the Four.

**Luke, GEORGE LAWSON JOHNSTON, 1ST BARON** (1873–1943). British industrialist and philanthropist. Born Sept. 9, 1873, and educated in Canada and Scotland, he travelled in Argentina and British dominions before returning in 1906 to join the board of Bovril, Ltd., which his father had founded, and of which he later became chairman. Johnston was on the council of the London chamber of commerce, and chairman of the national committee of the international chambers of commerce. A great benefactor of voluntary hospitals, he was chairman, 1922, of the committee which organized a combined appeal; also chairman of the British charities association, treasurer of the London Red Cross, and vice-president of the British and Foreign Bible Society. In 1936 he introduced in the house of lords a bill dealing with paying patients in voluntary hospitals. Knighted in 1920, he was raised to the peerage in 1929; his title was said to be taken from S. Luke, the patron saint of physicians. Lord Luke died Sept. 23, 1943, and the title went to his son, Ian St. John Lawson Johnston. Born June 7, 1905, and educated at Eton and Trinity College, Cambridge, he succeeded his father as chairman of Bovril Ltd.

**Lukin, LIONEL** (1742–1834). British inventor of lifeboats. He was for many years a fashionable London coachbuilder in Long Acre,

and later (1785) he obtained a patent for an unsinkable boat. In 1790 he published a description of his lifeboat with illustrations drawn to scale. Among his other inventions was a raft for rescuing people from under ice, an adjustable bed for invalids, and a rain-gauge. He died Feb. 16, 1834. See Lifeboat.

**Lukmanier Pass.** Mountain route in Switzerland, between the cantons of Grisons and Ticino. It is part of the carriage road from Disentis to Olivone and Biasca, on the St. Gotthard rly. Alt. 6,290 ft.

**Lukuga.** River of Africa. Flowing from Lake Tanganyika to the Congo, it forms an outlet for the surplus waters of the lake, but is not navigable. A rly. has been built along the Lukuga valley, from Albertville on the lake to Kabalo on the Lualaba.

**Luleå.** River of N. Sweden, in the govt. or län of Norrbotten. It issues from a lake at the foot of the Kjölen Mts., flows S.E., and discharges into the Gulf of Bothnia at Luleå. There is a fine waterfall in its upper reach. The length of the river is about 250 m.

**Luleå.** Seaport of Sweden, in the govt. or län of Norrbotten. It stands at the entrance of the Luleå into the Gulf of Bothnia, 58 m. W.S.W. of Haparanda, and is connected by rly. with Gällivare and Narvik in Norway. It has a good, well-equipped harbour. Among the principal exports are Gällivare iron ore, timber, tar, reindeer hides, and salmon. Most of the iron ore from Luleå went to Germany, to whom it became of special importance on the outbreak of the Second Great War. It was sent by rail to Narvik, and thence by sea: the British action in mining the Norwegian territorial waters around Narvik, so as to force the iron-ore boats into the open sea where they could be attacked by naval patrols, was cited by Germany as a factor justifying her invasion of Norway in 1940. Pop. 15,208.

**Lule Burgas or BURGOS.** Town of European Turkey. On the Karagach, it is about 35 m. S.E. of Adrianople (Edirne), and lies on the Sofia-Istanbul rly. It is a commercial centre. A battle was fought there Oct. 28–Nov. 2, 1912, between the Bulgarians and the Turks in the First Balkan War. The Bulgarians attacked on a 25-mile front from the Ergene to Bunar Hissar, and after two days' fighting with fluctuating fortunes forced their way into Lule Burgas on Oct. 31. The Turkish army, cut in two, broke off the fight and retired; but

the Bulgars, who had lost 15,000 men from wounds and sickness, were too exhausted to pursue them.

**Lull, RAMON.** A Spanish mystic whose name is anglicised as Raymond Lully (*q.v.*).

**Lully** OR **LULLI, JEAN BAPTISTE** (1632-87). A French composer. Born at Florence, Nov. 29, 1632



J. B. Lully,  
French composer

(the year has been disputed), Lully went to France as a child and became a naturalised Frenchman in 1661. He entered the service of Louis XIV as a violinist, and later

was made conductor of the king's orchestra, given charge of the opera, made music master to the royal family, and honoured with a title of nobility. He composed in 1672 *Les Fêtes de l'Amour et de Bacchus*, which marks the beginning of French opera, following up this with about 20 operas. Molière collaborated with him in about 20 ballets written for the court. He died in Paris, March 22, 1687.

**Lully, RAYMOND** (1235-1315). Spanish philosopher and missionary. Also known as Ramon Lull, he was born at Palma, Majorca, of a noble and wealthy family, became a prominent figure at the court of Aragon, and achieved repute as a poet and man of the world. In 1265 he resolved to devote himself to the conversion of the Saracens. Believing that the truth of Christianity could be demonstrated by reason he devised the so-called Lullian method, for the solution of all problems, aided by a mechanical contrivance. He also acquired proficiency in Oriental languages, for the study of which he established chairs at Paris, Oxford, and Salamanca.



Raymond Lully,  
Spanish philosopher

After journeys in Asia and Africa, on the occasion of a third missionary visit to Tunis, where he preached against Islam, he was stoned and left on the seashore, whence he was rescued by a sea-captain, but died on board ship, June 30, 1315. His voluminous works include *Ars Magna*, descriptive of his method for the acquisition

of knowledge, and two books against Averroes and the Averroists. He was known as the enlightened doctor, and much of his teaching was remarkably liberal for his age. His followers combined mysticism with alchemy. Consult Raymond Lull und die Anfänge der Catalonischen Literatur, A. Helfferich, 1858; Fool of Love, E. A. Peers, 1947.

**Lulworth.** Two villages of Dorset, England. West Lulworth lies on the coast 8 m. S.W. of Wareham, and near it is Lulworth Cove, a circular bay about 500 yds. across and almost enclosed by hills. Here Keats wrote his last sonnet before finally leaving England. Along the cliff may be traced a fossil forest. At East Lulworth, inland and 3 m. away, is a 16th century castle. During the Second Great War Lulworth was a training ground for the Royal Armoured Corps. Pop. 1,368.

**Lumbago** (Lat. *lumbus*, loin). Painful affection of the muscles of the loins and their tendons, due to inflammatory changes in the fibrous tissue or fascia which surrounds the muscles. The affection may follow a strain in lifting weights and is often associated, in a way not understood, with nervous strain or fatigue. Exposure to cold and wet is a frequent exciting cause. The pain comes on suddenly, and the patient often rises from bed or from a sitting posture with great difficulty. Rest of the muscles is an important part of the treatment. The back should be protected from cold, and the application of heat and counter-irritants, or of short wave or infra-red rays, may result in sudden cure. Injections of cocaine or its derivatives into the local sensory nerves often give dramatic relief.

**Lumbar Puncture.** A procedure now common in the diagnosis and treatment of many diseases, especially those affecting the nervous system. It consists essentially of puncturing the spinal canal with a hollow needle, inserted between the third and fourth lumbar vertebrae slightly to one side of the midline. The exact position of the patient, and the exact method of withdrawing fluid, vary with the technique of the individual surgeon.

Diagnosis is aided by the presence of cells, bacteria, altered appearance of the fluid, or altered pressure; and treatment is aided by the possibility of introducing drugs or sera directly into the spinal canal or of lowering pressure by mechanical removal of fluid.

Anaesthesia is frequently induced by this means, the patient remaining conscious but feeling no pain during operation.

**Lumber.** Timber sawn and split for use in the form of beams, boards, joists, etc. The term originated in America, where the



Lulworth Cove, Dorset. Bay, very nearly land-locked, which was once a favourite haunt of smugglers

fellings of timber and its transport was first begun on a large scale, this being called lumbering. On the E. seaboard, the industry in the U.S.A. and Canada gives winter employment to thousands of hands who work in summer and autumn on the farms. On the Pacific coast, owing to climatic differences, it is an all-the-year-round occupation, and forest practice, more highly mechanised than in the E., is carried on by means of logging railways and trucks which carry the logs to the water, where they are towed to their destination.

In the E., lumbering gangs begin work in the late autumn and the fellers work in pairs, one on each side of the tree. The trees are partly cut down with axes and partly by saws, hand- or power-driven. The felled and trimmed trees are hauled to the bank of the nearest stream and there usually sawn into lengths of from 12 to 20 ft. The logs are piled up by the river in readiness for the thaw, and when the ice melts and the river begins to flood, the logs are floated down the stream to the sawmills. All the logs, before being sent to the mills, are measured by scalers, who estimate the quantity of usable timber in each log. The operation of sending the logs down the river is one which requires much skill,

as there may occur a log jam. Such jams may hold up the river, and they can be prevented or cleared only by men who carry long steel-pointed poles, and keep the logs moving. Where the river admits of it, the logs are bound together by ropes or chains into large rafts. Some of these rafts, floated down the St. Lawrence, for example, are several acres in extent, and the lumber men in charge live on them for days at a time. At the saw-mills the rafts are broken up, sawn into beams and planks, and stacked to dry for export. See Forestry; Timber.

**Lumen.** Unit of luminous flux. It is the luminous flux emitted in unit solid angle by a point source of one international candle, i.e. the flux passing through unit area of a sphere of unit radius with its centre at the source. It is not possible to assign a definite mechanical equivalent, but at the wavelength (5,560 Å) of maximum eye sensitivity 621 lumens equal 1 watt. The density of flux received on a surface is a measure of the illumination (*q.v.*), the unit of which is the lux (1 lm. persq. metre).

**Lumière.** Name of two French brothers, Auguste Marie Louis Nicholas (b. 1862) and Louis Jean (1864-1948), joint inventors of the cinematograph, a primitive moving picture machine. Working as photographic manufacturers in Lyons, the brothers patented their projector in 1895, giving their first public film show in Paris in Dec. An exhibition of moving pictures made by the younger Lumière, at the London Polytechnic on Feb. 20, 1896, was the first display in public in England. Forty years later this programme was repeated at the Polytechnic with the original projector. See also Colour Photography, page 2249, col. 1.

**Luminescence.** Light emitted otherwise than as the result of heating or incandescence. It appears in several forms, *e.g.* fluorescence and phosphorescence, described under their respective headings, and in the light emitted by a number of animals and insects. Many solid substances re-emit light after illumination; the effect is generally feeble and of short duration, but is more intense at low temperatures such as the b.p. of oxygen or nitrogen. With some substances luminescence is shown by a substance in the pure state, with others only when they contain impurities. The luminescence of animals and insects, at one time confounded with phosphorescence, has nothing to do with the presence

of phosphorus in their tissues, but the exact cause has not yet been satisfactorily explained. Light is emitted by many deep-sea fishes, *e.g.* the lantern fish; surface sea animals like jellyfish; glow-worms, flies, etc. Such light is practically devoid of heat rays. See Firefly; Glow-worm.

**Luminosity.** Term in physics. The luminosity or brightness of a surface is measured by the amount of light emitted per unit area. The lambert is the unit of luminosity and corresponds to the emission of 1 lumen (*q.v.*) from one sq. cm. of surface. Alternatively the brightness of a surface may be expressed as candle-power per unit area. The milli-lambert, i.e.  $10^{-3}$  lambert, is the most useful unit; the luminosity of objects in sunlight is about 1 lambert, while indoor brightness may be between one and ten milli-lamberts. The luminosity of a high-current density carbon arc is about 60,000 and in contrast that of a glow-worm about .005. To measure the luminosity of a colour, a standard or unit of luminosity has to be fixed, and two cases have to be considered, the first when coloured lights are being evaluated, and the second when dealing with the colours seen when pigments are illuminated by white light. With coloured lights, the unit taken is some of the white light produced by the source which gives the coloured light. With pigments, it is the luminosity of a white surface illuminated by the same light.

The luminosity of a body is, in general, caused by its being so hot as to become incandescent, and the temperature at which bodies become luminous varies considerably. The luminosity of many flames is due chiefly to the incandescence of the carbon particles released by the chemical decomposition of the combustible gases. See Flame; Photometry.

**Luminous Night Clouds.** Clouds occurring at heights which have been determined photographically to be approximately 50 miles above the earth's surface. They have been seen at intervals in both hemispheres, about midnight, particularly just after the summer solstice. They show bluish-yellow coloration and most frequently move from the N.E. with velocities up to 300 m.p.h. See Cloud.

**Lumphanan.** Village of Aberdeenshire, Scotland, about 8 m. S. of Alford and served by rly. from Aberdeen. Here on Aug. 15, 1057, Macbeth was slain in battle by Malcolm Canmore, a cairn being supposed to mark the spot.

**Lumpsucker** (*Cyclopterus lumpus*). A family of short, thick fishes. They are found around the



Lumpsucker. Specimen of the species found on British coasts

coasts of the northern seas, one species being common in British waters. On the chest these fishes have an adhesive disk by which they attach themselves to the rocks. They are usually about a foot in length, and feed upon the young of other fishes, crustaceans, etc. The males have bright red and yellow sides, and are able to modify their colour to match their surroundings. It is they that watch over the eggs during the breeding season.

**Lumsden, Sir Harry Burnett** (1821-96). British soldier. Son of a colonel of the Bengal Artillery, he was born Nov. 12, 1821, and educated in England. In 1837 he entered the service of the East India Co., and in 1838 obtained a commission in the Bengal army. In 1842 he served as an interpreter in Afghanistan. After experience of border warfare, he was given the task of raising the corps of guides, with which his name is chiefly associated. He led the corps in the war against the Sikhs, and in several campaigns on the frontier, although not continuously in command. He retired in 1875, and died Aug. 12, 1896. See Guides.

**Lunacy** (Lat. *luna*, the moon). Term equivalent to insanity, since it is recognized that some forms of insanity are influenced by the phases of the moon. The lunacy laws deal with the care of the insane. See Insanity.

**Lunacy Commissioners.** Officials who formerly supervised the administration of laws relating to the insane. They were nominated and removable by the lord chancellor. By the Mental Treatment Act, 1930, their functions were transferred to the board of control. See Insanity.

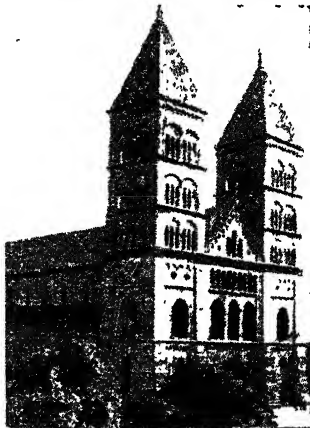
**Lunar Caustic** OR SILVER NITRATE. Crystalline salt used as a caustic to destroy warts, exuberant granulations, etc. It is usually put up in the form of sticks, the thickness of a slate pencil. The name is due to the use in alchemy of Lat. *luna*, the moon, for silver.

**Lunar Cycle** OR METONIC CYCLE. Period of 235 lunations, which is almost exactly equal to 19 solar years. Discovered by Meton, a native of Athens, c. 433 B.C., the metonic cycle differs by  $1\frac{1}{2}$  hours from 19 Julian years. See Calendar.

**Lunardi, VINCENTO** (1759–1806). Italian aeronaut. Born at Lucca, Jan. 11, 1759, he was attached to the Neapolitan embassy in London. He studied aerostatics, and constructing a balloon with a circumference of 33 ft., which he filled with hydrogen, he made an ascent from Moorfields, Sept. 15, 1784. The balloon was furnished with oars, which proved useless, and after a journey of  $2\frac{1}{2}$  hours he descended at Ware. This was the first ascent in England. Lunardi later made ascents from Edinburgh and Glasgow. He died July 31, 1806. See Aeronautics.

**Lunar Month.** Period during which the moon goes through a complete sequence of its phases, i.e. from new moon to new moon. Its average period is 29 days, 12 hours, 44 minutes, 2-8 seconds.

**Lund.** City of Sweden. In the län or co. of Malmö, it is 13 m. N.E. of Malmö. The chief build-



Lund, Sweden. Western front of the Romanesque cathedral

ing is the large and noble Romanesque cathedral, consecrated in 1145. The university is a noted institution; connected with it are an observatory, botanical gardens, etc. The industries include sugar refining and making furniture. Pop. 31,313.

Lund was an important place in the 10th century or earlier. About 1050 it was made the seat of a bishop, while during 1163–1536 its archbishop was primate of Scandinavia. It was a seaport in early



Lundy Island, Bristol Channel. Harbour and landing place on south-eastern shore

times, the sea having now receded. Several historic events have taken place in or near Lund, which is said to have been the largest city in Scandinavia in the Middle Ages. In 1676 Charles XI of Sweden defeated the Danes here, and the peace which followed is called the treaty of Lund.

**Lunda.** Country in West Central Africa, divided between the Belgian Congo and Portugal. The Portuguese portion forms one of the six provs. into which Angola is divided. It is in the N.E. of the colony, and the administrative capital is Malanje, in the prov. of Loanda. Most of Lunda is drained by a series of parallel streams.

**Lundholm, CARL OLAF** (1850–1934). An Anglo-Swedish chemist. A native of Stockholm, in 1878 he went to Paris and met Alfred Nobel (*q.v.*), whom he soon joined in Scotland. Lundholm designed the fulminate factory erected in Stirlingshire, 1879–80, and was appointed assistant manager. For 20 years he managed the Ardeer factory in Ayrshire (later owned by I.C.I.). One of the most courageous and successful pioneers of explosives research, he became a naturalised British subject in 1890 and was technical adviser to the Nobel Trust during 1909–14. Lundholm died on May 8, 1934.

**Lundy** (Old Norse. grove island). Small island off the N. coast of Devon, England. It is 12 m. N.N.W. of Hartland Point. Almost entirely surrounded by cliffs, the island was at one time the resort of pirates, and possesses many antiquities, including the remains of Marisco Castle and round towers. From granite

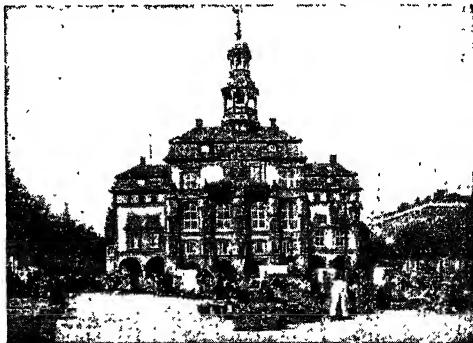
quarried here part of the Thames Embankment was constructed. There is a lighthouse popularly known as Lundy Light. The island, owned from 1836 to 1916 by the family of Heaven, was purchased by A. L. Christie in 1917. It was long the headquarters of the family of Marisco, famous for their piracies.

Its area is 1,047 acres, being 3 m. long and about 1 wide. Lundy coins, called puffins, were withdrawn in 1927 as not being legal tender. Consult Lundy, Isle of Puffins, R. Perry, 3rd ed. 1946.

**Lundy's Lane.** Roadway in Canada,  $1\frac{1}{2}$  m. from Niagara Falls. It is known for an engagement here, July 25, 1814, between the British and the Americans. An American force, under Gen. Jacob Brown, had invaded Canada, when it was met by a small army of British regulars and Canadian militia, under Sir Gordon Drummond. The battle that followed was indecisive, both sides making captures, but the Americans abandoned the invasion. The British, who at the end of the day were in numbers about 4,500 to 2,000, lost about 700. The Americans' loss of about 800 included a high proportion of officers.

**Lune.** River of England. It rises in the S.E. of Westmorland and flows S. and S.W. through Lancashire to Lancaster Bay. On it stands Lancaster, and it is navigable for 6 m. between that town and the sea. Its length is 45 m., and near its mouth is Glasson, the port of Lancaster.

**Lüneburg.** A town of West Germany, in Lower Saxony. It stands on the Ilmenau, 33 m. by



Lüneburg, Germany. Market place and town hall



ry. S.E. of Hamburg. It retains in its old buildings many signs of its former greatness. The town hall consists of a group of buildings dating from the 13th to the 18th century, and contains the magnificent princes' hall (Fürstensaale). The most notable churches are those of S. Nicholas, an imitation of S. Mary's at Lübeck, and dating from the early 15th century; the Gothic church of S. John, with a 350 ft. tower and double aisles; and S. Michael's (1418). Other buildings are the merchants' hall and the old palace of the dukes. There are remains of the town walls and a number of old houses; also a large library, a museum, and other modern edifices. The salt deposits have been worked since the 10th century, and limestone and gypsum quarrying are also old industries. Manufactures include iron goods, cement, chemicals, etc. To the S. of the town are saline springs and baths. Mentioned in the time of Charlemagne, Lüneburg was an important member of the Hanseatic League in the Middle Ages. Near it took place the first fighting in the war of liberation, April 2, 1813. Pop. 29,000.

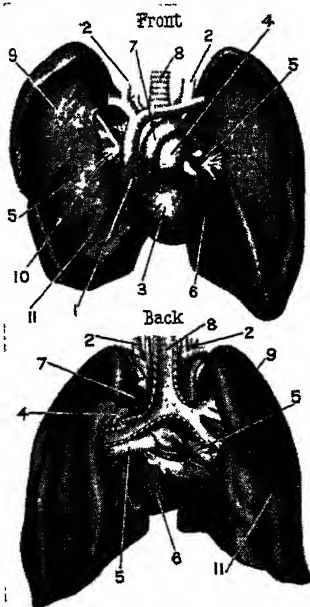
At a point on Lüneburg Heath, S. of the town, F.-M. Montgomery on May 4, 1945, received the surrender of all German armed forces in the Netherlands, N.W. Germany, Slesvig-Holstein, and Denmark, amounting to more than a million men. This virtually marked the close of Great Britain's European campaign in the Second Great War, and Lüneburg served for a time as main h.q. of the British forces. The site of the surrender is marked by a memorial. (See Montgomery, Viscount.)

The little duchy of Brunswick-Lüneburg, of which Lüneburg was the capital, was an offshoot of the duchy of Brunswick. It existed from 1235 to 1369. Later it was made into a separate principality for junior members of the family ruling over Brunswick. See Brunswick; Hanover.

**Lunenburg.** Town and seaport of Nova Scotia, Canada. It is 70 m. S.W. of Halifax, with a station on the C.N.R. It has a good harbour (22 ft. at low water), and the chief industry is fishing; there is also a cold storage plant. Pop. 2,856.

**Lunette** (Fr., little moon). Term in architecture denoting a round or oval window in a ceiling, flat or domed. As a method of lighting a dome it was used as an alternative to the lantern (*q.v.*) or cupola (*q.v.*), the chief drawback to such

use being that it broke the line of the curve. The term is also applied to a picture enclosed by an architectural circular or oval frame in the ceiling of a building.



**Lung.** Front and back views of the organ. 1. Right auricle. 2. Internal jugular veins. 3. Right ventricle. 4. Pulmonary arteries. 5. Pulmonary veins. 6. Left ventricle. 7. Aorta. 8. Trachea. 9. Upper lobe; 10, middle lobe; 11, lower lobe, right lung

**Lunéville.** Town of France, in the dept. of Meurthe-et-Moselle. It lies on the Meurthe, near its junction with the Vezouze, 20 m. by rly. E.S.E. of Nancy. It is the capital of an arrondissement and an important military centre, with large barracks. Now chiefly industrial, Lunéville has large rly. and motor engineering shops, industries in spinning, glove-making, tanning, and pottery, and trade in the agricultural produce of the district. The massive château, built by Duke Leopold I of Lorraine, 1703-06, and the 18th cent. church of S. Jacques are noteworthy features of the town, which was probably a Roman settlement known as Lunae Villa and became part of Lorraine in the 14th cent. It was a residence of the dukes of Lorraine from 1702 to 1737 and passed with the duchy to France in 1766. It was occupied by the Germans, Aug. 24-Sept. 11, 1914, and again in 1940. U.S. forces liberated it Sept. 16, 1944, without serious opposition from the Germans. Pop. 20,377.

**Lunéville, TREATY OF.** Peace made in 1801 between France and Austria. Napoleon's victories of Marengo and Hohenlinden forced Francis of Austria to ask for peace. By this treaty, signed Feb. 9, 1801, the Cisalpine, Ligurian, and Helvetic republics were recognized, and the Rhine was fixed as the boundary of France. It made France the dominant power in Italy, where Naples deserted Great Britain and made peace.

**Lung.** The organ of respiration. In man the two lungs occupy a bony cage, the thorax, which is bounded by the ribs laterally, by the spine at the back, and by the sternum, or breastbone, in front. They occupy almost the whole cage, which contains also the heart, the great blood vessels that enter and leave it, the trachea or breathing-tube, and the oesophagus, which is the first part of the alimentary tract. Each lung is cone-shaped, with the base resting on the diaphragm, the most important muscle in respiration. The apex of the cone extends upwards into the root of the neck, behind and above the collar-bone.

The root of the lung, or hilum, is fixed, in that it contains one division of the trachea, which there divides into its two main branches, the right and left bronchi. At this point also the main arteries and veins of the lung pass between it and the heart. Thus the root of the right lung contains the right pulmonary artery, which conveys venous blood from the right ventricle of the heart, and two pulmonary veins which bring back to the left auricle the arterial blood to be distributed to the body through the aorta and its divisions. Of this arterial blood the lung gets its share from the bronchial arteries which accompany the subdivisions of the main bronchus throughout the organ.

Each lung has round it a fine serous membrane, the pleura, which is in two layers. The inner, or visceral, layer is closely applied to the lung; it reflects at the root to form a second or parietal layer, which lines the inner surface of the thorax. The result is an interpleural space in which the lung can move freely on respiration. Movement is aided by the negative or sub-atmospheric pressure which exists in the space, and therefore does not oppose expansion of the lung by inspired air at atmospheric pressure.

The right lung is the larger and has three main parts called lobes;

the left has two lobes. These lobes are divided into several lobules, each about a quarter of an inch in length. A lobule is also cone-shaped, its apex being at the point of entry of its supplying air-tube called a terminal bronchiole. Each lobule is made up of bunches of alveoli or air-cells. Their very thin walls consist of elastic tissue containing the finest divisions of the pulmonary artery. It is through the air-cells that the lung fulfils its function of bringing about gaseous interchange. Oxygen in the inhaled air is brought in contact with the venous blood in the final subdivisions of the pulmonary artery. This venous blood contains carbon dioxide, the waste product formed in the metabolism of the body. The oxygenated blood which results becomes arterial blood, and is returned to the heart by the pulmonary veins, while the carbon dioxide is exhaled from the lung. See Anatomy; Pleurisy; Pneumonia; Respiration; Tuberculosis.

**Lungchingsun.** The name of several places in China, of which the chief is a village in Chekiang province, near Hangchow, famous for its green tea. The name means dragon well village.

**Lungchow.** Town of China, on the Li river, one of the head-streams of the West river. It is in the S.W. of Kwangsi prov., near the border of French Indo-China, a former treaty port, opened to trade in 1889. Pop. 45,000.

**Lungkow.** A port on the N. coast of Shantung prov., China. It was opened to foreign trade as a branch of the Chefoo customs in 1915. Pop. 10,676.

**Lungs of Oak** OR **TREE LUNGWORT** (*Lobaria pulmonaria*). Large lichen. It grows chiefly upon the bark of old trees, particularly the oak. It is brownish, and the margins are deeply lobed. The de-

pressions and net-like markings of the under surface suggested a resemblance to the lungs, so under the doctrine of signatures it was established as a remedy for pulmonary troubles, and the herb-doctors prescribe it as such today. Its real value is to the dyer, to whom it is one of the Cottles, and applied to the dyeing of yarn and woollen goods.

**Lungwort** OR **JERUSALEM COWSLIP** (*Pulmonaria angustifolia*). Perennial herb of the family



Lungwort. Leaves and flower clusters

of the same folk-name is *P. officinalis*, with broader leaves, always spotted, and pale purple flowers.

**Luni.** A river of India, in Rajputana. It rises in the Aravalli Hills, in the W. of Ajmer-Merwara, and flows generally S.W. through Jodhpur to the Rann of Cutch, along the S.E. edge of the Thar desert. Its main affluents, of which the Sukri is the longest, reach the left bank from the Abu mt. ridge. The whole of this river system is usually dry except during and immediately after the infrequent rains.

**Lunn, ARNOLD** (b. 1888). British writer. Born in Madras, April 18, 1888, son of Sir Henry Lunn, he was educated at Harrow and Balliol College, Oxford. He was president at different times of the Ski Club of Great Britain and other skiing and mountaineering clubs, and wrote entertainingly on winter sports and travel in Switzerland and Italy. Other books to attract attention were a life of John Wesley, 1928; *The Flight from Reason*, 1930; *Is Christianity True?* (with C. E. M. Joad), 1933; *Spanish Rehearsal*, 1937; *Communism and Socialism*, 1938; *The Good Gorilla*, 1943; *Is the Catholic Church Anti-Social?* (with G. G. Coulton), 1946. An autobiography appeared in 1940.

**Lunn, SIR HENRY SIMPSON** (1859-1939). British travel organizer. Born at Horncastle,

July 30, 1859, and educated at Dublin university, he went to India as a Wesleyan medical missionary in 1887. Returning in ill-health the following year, he took a leading part in the West London Mission, edited *The Review of the Churches*, 1891-96, and founded the Grindelwald conferences, 1892-96, out of which grew his famous travel organization. His published works included *Chapters From My Life*, 1918; *Secrets of the Saints*, 1933; *Nearing Harbour* (autobiography), 1934. He died March 18, 1939.

**Lunn, LOUISE KIRKBY** (1873-1930). British singer. Born in Manchester, Nov. 8, 1873, she studied at the R.C.M., London, and made her debut in Schumann's *Genoveva* at Drury Lane, 1893. She sang as Nora in *Shamus O'Brien*, 1896. Success was confirmed by her performances as principal mezzo or contralto with the Carl Rosa Company, 1897-99. During 1901-14 she sang each season at Covent Garden, and was a favourite in *Aida* and *Parsifal* at the Metropolitan, New York. Kirkby Lunn, who married W. J. K. Pearson, died Feb. 17, 1930.

**Lunt, ALFRED** (b. 1893). American actor, born at Milwaukee, Aug. 19, 1893. He made his stage debut at Boston in 1913 and scored a success in *Clarence*, 1919-21. In London he was known for witty and polished performances with his wife, Lynn Fontanne (q.v.). The first was *Caprice*, 1929. Other successes of "the Lunts" were *Reunion in Vienna*; *The Guardsman*; *Idiot's Delight*; *Amphitryon 38*; *There Shall Be No Night*; *Love in Idleness*, 1944.



Alfred Lunt. American actor

**Lunula** (Lat., little moon). Crescent-shaped gold ornament. It is undecided whether they were worn on the hair or the neck. The edges and horns were generally punched or engraved with chevron patterns. Of the 83 examples known there were found in Ireland 64, Cornwall 4, Scotland 4, France 6, Denmark 2, Wales 1, Belgium 1, Hanover 1. At Newtown, county Cavan, one was found in its oak case. Lunulae mark the channels of trade with early Bronze-age Ireland (1500-1000 B.C.), the alien finds having come from the vicinity of ancient harbours. The word



Lungs of Oak. Specimen of the large lichen which grows on tree trunks

denotes also an ivory crescent worn upon the leather boot (*calceus*) of senators in ancient Rome.

**Lupercalia.** Ancient Roman festival. It was held in honour of the god Lupercus, on Feb. 15. It was originally pastoral and centred round the idea of the fruitfulness of the earth and of nature. After sacrificing animals to the god at his altar on the Palatine, the priests cut leather thongs, called *februa*, from their skins, and as they passed through the streets the women crowded round to be struck by these thongs, in the belief that their fecundity would thereby be promoted. This festival is referred to in Shakespeare's *Julius Caesar*. See February.

**Lupescu, MAGDA** (b. 1900). Second wife of Carol II (*q.v.*) of Rumania. A native of Jassy, she was the daughter of a Jewish apothecary named Wolff, and first married an army officer. She met Prince Carol in 1923; he gave up his claim to the throne, and lived with her in Paris, where she stayed when he assumed the crown in 1930. Both divorced, they joined again when he left Rumania in the Second Great War, and lived in Lisbon, Mexico, and from 1944 Rio de Janeiro. In 1947, when she was suffering from seemingly fatal anaemia, they were married. Magda Lupescu was known to have exercised a wise influence upon the king.

**Lupin.** Genus of leguminous plants (*Lupinus*), cultivated for their flowers. They are hardy and half-hardy annuals and perennials, natives of America and S. Europe, ranging in height from 6 ins. to 5ft., and bearing white, yellow, pink, or blue flowers. They should be planted in autumn in rich soil, and the half-hardy, sub-shrubby kinds need the protection of a layer of litter in winter. The annual sorts should be treated as ordinary annual plants.

**Lupin, ARSENE.** Central figure in a series of detective novels by

the French author, Maurice Leblanc (*q.v.*). Among the rather extravagant adventures of the "gentleman crook" was one in which he crossed swords with Sherlock Holmes. He figured in *A.L., Gentleman Cambrioleur*; *A.L. contre Sherlock Holmes*; *Le Bouchon de Cristal*; *Les Trois Crimes d'A.L.*; *La Demoiselle aux Yeux Verts*.

**Lupino.** Name of a British theatrical family. It traces descent from George Lupino, of an hereditary Italian family of puppet players who migrated to England at the beginning of the 17th century. Numerous Lupinos won fame as acrobatic dancers and music hall artists. George (1853-1932), a dancer, married Florence Webster (1860-99), and their most famous son was Stanley (1894-1942), actor and dancer. Born May 15, 1894, he appeared in *Lyceum pantomime*, 1910, and in numerous revues and musical comedies in London and New York. His reminiscences, *From the Stocks to the Stage*, appeared in 1934. He died June 10, 1942.

His brother Barry, comedian and dancer (b. Jan. 7, 1884), became a star of London and provincial pantomimes, and appeared in a revival of *Me and My Girl*, 1941. His speciality was trap-door acrobatics. Ida (born Jan. 1, 1916), daughter of Stanley, studied at the R.A.D.A. and first appeared on the screen in *The Love Race*. Joining the Paramount company in Hollywood, 1933, she built up a reputation as a serious actress in such films as *Peter Ibbetson*; *The Light that Failed*; *The Hard Way*; *Devotion*, 1946. She became an American citizen in 1947.

Lupino Lane (Henry George Lupino, b. June 16, 1892), cousin of Stanley and Barry, played in pantomime, music halls, musical comedy, revue, and films, beginning at the age of 11 as Master Nipper Lupino Lane. In 1937 he produced, presented, and acted in *Me and My Girl* at the Victoria Palace, giving 1,550 performances. In this piece he created the *Lambeth Walk* (*q.v.*). Another of his shows was *Meet Me, Victoria*, 1944. His brother, Wallace Lupino (b. Jan. 23, 1897), was also a dancer and actor.

**Lupus.** One of the ancient constellations. In the S. hemisphere, between the Centaur and the Altar, it contains several double stars.

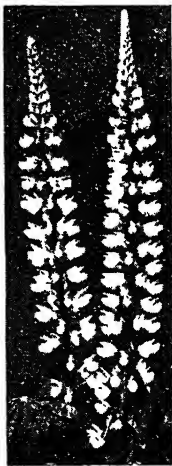
**Lupus** (Lat., wolf). Term applied to several distinct forms of disease of the skin. *Lupus vulgaris*, generally spoken of simply

as lupus, is due to infection with the bacillus of tuberculosis. The disease usually begins before the 10th year, and only exceptionally as late as the 20th. It is much commoner in females than in males. Unhealthy influences, such as bad housing and insufficient diet, increase the liability to the disease, as in all cases of tubercle.

Lupus may attack any part of the skin, but usually the nose, cheek, and ears. It begins with the formation of a little yellow or yellowish-red nodule or spot, which slowly spreads over the surrounding area; sometimes the centre of the patch heals with the formation of scar tissue, producing irregular lesions. Ulceration of the tissues may occur, leading to the destruction of parts of the nose, lips, or ears. The disease may last 20 or 30 years. General treatment consists in building up the constitution with good feeding and healthy living. Local treatment is to remove the affected tissue by caustics, cauterisation, scraping the affected area, or in some cases excision. Treatment by the Finsen light process, by light from a powerful electric lamp, the rays of which are passed through a column of distilled water, has been effective. Large doses of Vitamins A and D give good results.

*Lupus erythematosus* is an inflammatory disease of the skin, the exact cause of which is unknown. Much more frequent in females than in males, it usually begins with the appearance on the skin of flat red spots, which may have a smooth and dry or a scaly surface. The patch slowly spreads and often heals in the centre, producing irregular distribution. The bridge of the nose and the cheeks are the areas most often affected, and the shape of the patches in this region has led to the term butterfly lupus. The condition tends to last for a period of many years. Quinine, salicin, and arsenic are useful. The affected parts should be treated with protective lotions. Hot or cold air playing on the skin surface must be avoided, and a simple diet which does not cause flushing of the skin is indicated. As nearly all cases prove to be rooted in infected conditions of the teeth or sinuses, the clearing of this septic field is the first step in treatment.

**Luray.** Village of Virginia, U.S.A., in Page co., 96 m. N.N.W. of Richmond, and on a rly. It has tanning, flour, and other industries, and in the locality are mineral springs. Luray is chiefly notable



Lupin. Flower-spikes of *Lupinus roseus*

for a magnificent stalactite cavern, discovered in 1878, having a depth of 260 ft.

**Lurcher** (from lurch, variant form of lurk). Cross between a greyhound and a sheepdog. This breed possesses wonderfully keen sight and scent, moves about in absolute silence, and is quick to perceive and obey the slightest sign from its master. It is a born poacher and takes to the business with hardly any training. The



Lurcher. Dog which is a cross between greyhound and sheepdog

lurcher is usually faithful to its master, but a dangerous foe.

**Lurgan.** Urban dist. of co. Armagh, N. Ireland. It is 20 m. by rly. S.W. of Belfast. The chief industry is the manufacture of linen; another is that of tobacco. The poet A. E. (G. W. Russell) was born here. Near the town is Lough Neagh. Lurgan was founded by settlers from England early in the 17th century, William Brownlow being mainly responsible. The barony of Lurgan, dating from 1839, is held by the Brownlows, and Lurgan Castle was built as Lord Lurgan's seat. Pop. 13,766.

**Luria, ISAAC** (1534-72). Jewish mystic. Born in Jerusalem, he settled in Cairo, and became a merchant there. When about 30 he decided to give his life to study and meditation, and began to live in a hut near the Nile. From 1566 to 1572 he was at Sefid, where was a circle of Jews who held similar ideas, and among them he lived, an influential figure, until his death. Many stories are told of Luria's intense piety and asceticism, and of the curious forms it took. Disciples gathered around him, and he is said to have worked miracles. His teaching laid special stress on the sanctity of the Sabbath. See Jews; Mysticism.

**Luristan.** Mountainous region of W. Persia. It is bounded N. by Kermanshah, W. by Iraq, S. by Khuzistan, and E. by Hamadan. Anciently it was part of Elam, or Susiana. Khurramabad is the capital. The people are mainly semi-nomadic Lurs, allied to the Bakhtiariis. Area, 15,000 sq. m. This prov. is not to be confounded with Laristan, the district S. of

Farsistan, on the S.E. side of the Persian Gulf.

**Lusaka.** Capital of Northern Rhodesia. Situated on the main Cape-Congo rly., 80 m. S. of Broken Hill, the town is a prosperous farming centre in a rich mineral district. Its aerodrome is a port of call for Central African Airways. The foundation stone of the central govt. offices was laid by the duke of Kent in 1934 and the town became the capital in 1935. Old Lusaka and the new administrative centre were united next year. Pop. 2,700.

**Lusatia** (Ger. *Lausitz*). Dist. of Germany, which came to form parts of Prussia and Saxony. Upper Lusatia lies between Dresden and Breslau, just N. of Bohemia, and Lower Lusatia between Dresden and Berlin. The name comes from the Slavonic tribe, the Lusitzi. The boundaries of the district varied both before and after it became German about 900. It was a border region, and a margrave of Lusatia is occasionally mentioned, but it never became a separate state. Both parts passed to the king of Bohemia; Upper, then called Baudissin, the old name of its capital Bautzen, in 1160, and Lower, two centuries later. Both were afterwards for some years part of Hungary. In 1620, during the Thirty Years' War, Lusatia was taken by the elector of Saxony, who retained it by the treaty of 1635. By then the majority of the people had become Protestants. In 1815 Prussia secured much of Lusatia, Saxony retaining only Bautzen and about 900 sq. m. of Upper Lusatia. The upper course of the Spree flows through the district. The chief towns in Lower Lusatia are Guben and Kottbus: in Upper, Bautzen and Gorlitz.

**Lushai Hills.** Dist. of India, in Assam. It is a wild and comparatively unknown area between the Manipur and Chittagong Hill tracts, bounded on the E. by the Chin Hills dist. of Burma. Most of it drains N. to the Surma river. The Blue Mt. (7,100 ft.), in the S., lies within the great hairpin bend of the Kaladan river. It is estimated that 70 p.c. of the area is cultivable, while only 2 p.c. are actually under tillage, almost entirely for rice. Area, 8,142 sq. m. Pop. 152,786, of whom 90 p.c. are primitive animists. The Lushais having repeatedly raided then British territory, expeditions were undertaken against them in 1871-72 and 1889-90, and their country was annexed.

**Lushington, STEPHEN** (1782-1873). British judge and reformer. Born Jan. 14, 1782, second son of



Stephen Lushington, British judge

Sir Stephen Lushington, chairman of the East India Co., he was educated at Eton and Christ Church, Oxford, and was called to the bar at the Inner Temple in 1806. As M.P. for Great Yarmouth, 1806-08, and Ilchester, Tregony, and the Tower Hamlets, 1820-41, he was a prominent Whig, and ardently supported the abolition of the slave trade, R.C. emancipation, and parliamentary reform. In 1820 he was one of the counsel for Queen Caroline (q.v.). He was judge of the consistory court of London, 1828-38, and dean of arches during 1858-67. His decisions as admiralty judge, 1838-67, are still cited. He died Jan. 19, 1873.

**Lushun.** Japanese name for the naval station and trading port in Manchuria better known as Port Arthur (q.v.).

**Lusiads, THE.** English title of the chief work of the Portuguese poet Camoens (q.v.). The original title is *Os Lusíadas* (The Lusitanians), and the poem is an epic in *ottava rima* telling of the history and romance of Portugal and its voyagers. There are English translations by W. J. Mickle, 1775. J. J. Aubertin, 1878; and Sir R. F. Burton, 1880.

**Lusignan.** Town of France, in the dept. of Vienne. It lies on the right bank of the Vonne, 16 m. by rly. S.W. of Poitiers. There is local agricultural trade and brush making is carried on. The church was originally the chapel of a priory founded in 1025, and there are remains of the château of the Lusignan family.

Lusignan is famous as the seat of a noble family whose origins are traced to Hugh I, who lived in the time of Louis IV (936-954). One branch of the house remained in France and several of the most distinguished French families claim relationship with this. Another was that which founded the line of kings of Cyprus and Jerusalem. Amalric became constable of Jerusalem, c. 1180, and succeeded his brother Guy (q.v.) as king of Cyprus, 1195, and became king of Jerusalem, 1197. The Lusignan dynasty ruled in Cyprus until 1475. To Hugh IV Boccaccio dedi-

cated a work. Peter I (d. 1369), a lifelong foe of the Saracens, was the last typical representative of the Crusaders. Under James II (1440-73) the line became virtually vassals of Venice, and the last king was his posthumous son, James III. From 1342 to 1375 members of the family reigned in Armenia. *See* Cyprus; Jerusalem; Melusina.

**Lusitania.** A part of ancient Spain. Originally the territory of the Lusitani, an Iberian tribe, between the rivers Tagus and Douro, it became a Roman prov. of Hispania in 27 B.C. Corresponding roughly with the present Portugal, it embraced also Spanish Estremadura and part of Leon, reaching almost to the city of Toledo. Mérida (Augusta Emerita) was the capital. Patriotic writers of the 15th cent. applied the name to Portugal. *See* Spain.

**Lusitania.** Cunard liner, torpedoed and sunk in the First Great War by a German submarine off the Old Head of Kinsale, Cork, May 7, 1915. She was one of the world's largest liners, her tonnage being 31,500 gross. After a warning by the German commander, two torpedoes were fired at the ship, which sank within 20 mins. of being first struck. She was on her way from the U.S.A., and had on board 1,255 passengers and 851 crew. Of these 1,198, including 124 Americans, were either drowned or killed. This incident, which caused serious anti-German rioting in the E. end of London, horrified the world and may have been one of the influences that determined America's entry into the war. In Germany a medal was struck in commemoration.

**Lussin or Lussino.** Island in the Mediterranean, one of the Quarnero group off the E. coast

of Istria. The pop. exceeds 8,000, although the island covers only 28 sq. m. There is a good harbour, Lussin Piccolo. Lussin was ceded to Italy by Austria after the First Great War. On the surrender of Italy to the Allies in 1943, it was occupied by German troops, but Yugoslav patriots landed on Oct. 3 and overcame the garrison. After the war Lussin was handed over by Italy to Yugoslavia, although the people are predominantly Italian.

**Lustre.** In optics, a characteristic appearance, or sheen, of certain objects which reflect light. According to the nature of the surface from which the light is reflected, lustre is described as metallic, vitreous, pearly, silky, resinous, or adamantine. The intensity of lustre is splendid, shining, glistening, or glimmering. Its cause is probably related to absorption and reflection of the rays of light below the surface layer of the substance. *See* Iridescence.

**Lustre.** Term applied to pottery covered with an iridescent metallic film or glaze. The earliest kind was silver; then golden copper iridescent glazes were introduced. *See* Belleek Ware.

**Lustrum.** Religious ceremony for the purification of the people of ancient Rome, conducted by one of the censors just before the expiration of his term of office. This term became fixed at five

years, and by a natural transition the word lustrum came to be applied to that period of time.

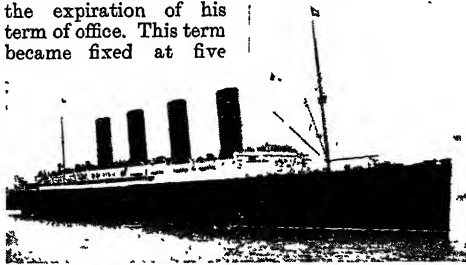
**Lute** (Lat. *lutum*, mud). A pasty mixture used to seal orifices and cracks. The term is used more specifically in connexion with chemical and metallurgical plant. Luting pastes are used e.g. for repairing cracks and sealing joints in chemical stoneware plants. Inert resistant materials, such as powdered asbestos, quartz, and barytes are sometimes added. When greater elasticity and plasticity is required, packings made of asbestos rope soaked in linseed oil or paraffin wax are often used. There is an increasing tendency to use special packings of impregnated sheets and rings cut to standard size and shape. Such materials often consist of asbestos cloth or board impregnated with suitable oils or with rubber: sometimes unvulcanised rubber is used and sulphur incorporated so that vulcanisation occurs *in situ*.

Sodium silicate (water glass) cements are widely used in chemical plant where resistance to acids is of first importance and the joint is not subject to mechanical strain. Quartz, asbestos, barytes, and similar powdered materials form the solid ingredient. Under the action of acid, silica is formed, and the joint becomes hard though somewhat brittle.

Such cements resist strong acid but not water or alkali. Where heat resistance and mechanical strength are not important, sulphur and sand make a satisfactory and resistant joint. Sometimes about 2 p.c. carbon

black is added to improve flowing quality. The luting is applied hot and sets on cooling. For glass joints pure glycerine and pink or yellow litharge in the proportions of one to five are much used.

**Lute** (Fr. *luth* from Arab. *al ud* the wood). Stringed instrument in great vogue from the earliest ages to the 18th century. It is of Eastern origin, and is said to have come westward with the returning Crusaders. The body is usually pear-shaped, built up with staves of wood like a cask, and often highly decorated. It has a long neck and finger-board with frets (*q.v.*). Many varieties existed,



Lusitania. Top, the Cunard liner at anchor. Below, medal struck by German government to commemorate its sinking. On reverse, left, Death issuing tickets at the Cunard office, above which are the words Business above everything. On the obverse, right, above the sinking vessel are the words No Contraband; below The Lusitania sunk by a German submarine, 7 May, 1915





Lute, inlaid with ebony and ivory, French, 17th cent. Victoria and Albert Museum

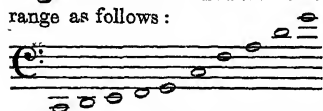
and still exist, in the East, and many sizes were in use in Europe also during the 16th and 17th centuries—e.g. treble, small mean, great mean, counter tenor, tenor, and bass. A larger type of lute, known as the theorbo or arch-lute, had some extra, deep strings, tuned to some of the principal scale notes.

The tuning of these bass strings had to be altered

when the music changed its key, and the lute family thus had an important influence on musical form (*q.v.*), it being the custom, for the sake of convenience, to write all the movements of a suite (*q.v.*) in the same key. According to old authorities, the early lutes had four strings, tuned thus:

Later two extra strings appeared, thus:

and the free, bass strings of fixed pitch made the range as follows:



Other kinds of tuning were employed. The tone of the larger lutes was an adequate support for a solo voice, and the bass strings were effective in the primitive orchestras of the 17th century.

**Lutetia** or **LUTETIA PARISI-ORUM**. Chief town of the Parisii, a Gallic tribe. Mentioned by Caesar in his Gallic War, it was situated on an island, the modern La Cité, in the Sequana (Seine) in Gallia Lugdunensis. An important town in imperial times, in the 4th century it became known as Parisii or Parisea civitas, whence the modern name of Paris (*q.v.*).

**Lutecium**. A chemical rare-earth element. It was discovered in 1908 by the French chemist G. Urbain, being isolated from an ore of ytterbium, with which it is usually associated. It has atomic number 71, atomic weight 175.0,

and its chemical symbol is Lu. It is called after Lutetia, the ancient name of Paris.

**Luther, HANS** (b. 1879). A German statesman. Born in Berlin, March 10, 1879, he was lord mayor of Essen from 1918. Popular for his resistance to French military occupation of the Ruhr in 1923, and having consequently lost his position, he joined Cuno's cabinet as minister of food, where he proved an impartial administrator. He soon became minister of finance under Stresemann and shared the credit for the stabilisation of the German currency. Luther took part in the London negotiations on the Dawes plan, and himself became chancellor, 1925-26. In 1930 he succeeded H. Schacht as governor of the Reichsbank, but was ousted by the latter after Hitler assumed power. Ambassador to Washington, 1933-37, but never a party man, he lost Hitler's trust, and was imprisoned as a suspect in connexion with the bomb plot of July 20, 1944.

**Luther, MARTIN** (1483-1546). German reformer. He was born at Eisleben, Nov. 10, 1483. The family life was often one of struggle against want, but the boy had a good education at Magdeburg and Eisenach, and was sent to the university of Erfurt, where he took his master's degree in 1505. Then suddenly he entered a monastery at Erfurt, because, as he put it, he doubted of himself—i.e. of his salvation in the world. He was the most rigorous of monks, but his convent life became a prolonged agony of soul, which was not ended till, chiefly from reading the Pauline epistles, he became assured that salvation consisted not in his presenting to God a credit balance in his moral life, but was a free gift in Christ, in Whom God, here and now, was ready to forgive and be friends with any man who turned to Him with repentance and faith.

This evangelical liberation made a new man of Luther, but it did not make him any less a Catholic monk, and he had no idea of leaving the convent or the Church. His career followed a normal course, and in 1508 he was transferred to the university of Wittenberg, where he taught and preached with great power. The ecclesiastical crisis of his life was precipitated by the appearance in Wittenberg of a friar, John Tetzel, selling indulgences under the papal authority. Not only had the traffic many elements of scandal, but it raised for Luther the whole

doctrine of the forgiveness of sins. He intimated that he proposed to discuss this publicly, and, according to the usual academic form, posted up certain theses for discussion. But Luther's 95 theses were thunderbolts, and their appearance in 1517 is rightly reckoned as marking the actual beginning of the Reformation.

Luther was summoned to Rome, but this first order was withdrawn, and conferences were held between him and the Church authorities, the most notable being at Leipzig in 1519, where he was accompanied by Melancthon. These conferences did not convert Luther but rather made him a popular hero, as a German asserting truth and freedom against papal corruption and tyranny. He had now a great audience, to which he further appealed in his three treatises on Christian Liberty, The Reformation of the Christian Estate, and The Babylonish Captivity of the Church. A breach with Rome rapidly became inevitable. When, in 1520, a papal bull condemned his views, he publicly burned it in Wittenberg. The daring of the deed made an immense impression.

Luther's heresy was now a matter of national concern, and he was summoned to the diet at Worms in 1521. His journey there was like a royal progress. Faced by both imperial and papal power, he would retract nothing. The authenticity of his famous saying "Here I stand, I can do no other" is disputed, but there is good authority for believing it. He left Worms in 1522 under warning of outlawry. Seized by friendly violence, he was carried off secretly to the castle of the Wartburg in the Thuringian Forest, where he remained in safety for a year, and wrote his great German translation of the Bible and many famous hymns.

Luther then returned to the battle of the Reformation and the task of organizing the German Protestant Church. For a time he clung to the idea that he might reform the existing Catholic church in Germany, but this hope failed. His work was disastrously complicated by the outbreak of the Peasants' War, 1525, with its class bitterness and savagery. Luther, never really a democrat, urged the princes to put down the rising with relentless severity, and thus lost popular sympathy for the Protestant cause, besides making the German Protestant Church erastian and oligarchic. Luther's later





Martin Luther, from the bronze statue by Siemering, unveiled at Eisleben in 1883

life was engrossed with ecclesiastical and theological discussion. In 1525 he had married Catherine von Bora, who had been a nun; and, while the marriage of two persons who had taken the vow of chastity caused scandal, his home life is the sweetest side of his tumultuous career. He died Feb. 18, 1546, at Eisleben, and is buried at Wittenberg.

Whatever differences of opinion there may be about Luther's Protestantism, there can be no question of the extraordinary greatness of the man. Both the good and the bad in him were on the grand scale. He was also a personality full of great contradictions. His extreme violence is matched by his beautiful tenderness; his frequent coarseness—which it is unjust to represent as anything in the nature of vice—by an often surprising delicacy; his masterfulness and impatience were complemented by tact and prudence. No man of his time more powerfully broke through to reality, yet his mind never lost a strain of superstition. Finally, the amazing self-confident egotism of his assertions before men is matched only by his utterly humble reliance upon God in his prayers. It is not possible to characterize such a man from one point of view. His faults, limitations, and errors are better known today than ever; but even these little alter the impression of a personality which can hardly be described as less than immense and a power which was truly elemental.

F. Carnegie Simpson

*Bibliography.* Works, 19 vols., 1539-58; Luther's Primary Works, Eng. trans. H. Wace, 1896; Me-

moirs, J. Michelet, Eng. trans. W. Hazlitt, 1846; Lives, J. Köstlin, Eng. trans. 1877; T. M. Lindsay, 1900; A. C. McGiffert, 1911; H. Griesar, Eng. trans. 1913; J. MacKinnon, 1930; F. F. Brentano, 1936.

**Lutheranism.** Form of religious faith, based on the teaching of Martin Luther. The Lutheran Church—the first and still the largest of the ecclesiastical organizations resulting from the Reformation—was named after the great German reformer against his own desire, and its truer name is the "Evangelical" as distinguished from the "Reformed" Church, the latter being the title appropriated to the Calvinistic communions. The whole idea of a formation of a new church, or separation from the "Catholic" Church, was



*Martin Luther*

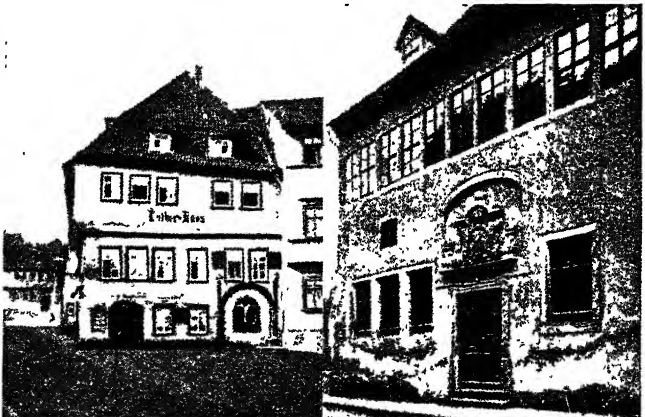
From the portrait by Holbein, Windsor Castle

no part of Luther's earlier aim. He hoped to see the Catholic Church—in Germany, at least—purified by the preaching of the true gospel aided by the civil authority; and

with this he would have kept the bishops and even recognized the pope as *summus episcopus*. Hence, the earliest arrangements in the congregations which accepted the reformed teaching in Germany; were of a makeshift character. But gradually it became clear that the reforming party could not live and work within the Roman Church. The pope excommunicated Luther, and Luther's attitude to the pope hardened into defiance and even detestation. An evangelical Church was imperative, if the evangel as the reformers conceived it was to survive in Germany.

Luther set about this, in the first instance, by arranging, in 1525-27, for a visitation of various districts, and this visitation revealed a state of great confusion in the reformed areas. In particular many of the priests who accepted the evangel as Luther taught it, were ignorant and quite incapable of organizing and governing a Church. To meet the situation, superintendents were appointed who acted in co-operation with the secular authorities. The government of the new Church—as also the control of schools and the care of the poor—came under consistories which were constituted by the territorial prince. It was not democratic, and Lutheranism never was self-governing, as from the first the Calvinistic Churches were.

This was due partly, no doubt, to the exigencies of the time; but also to the fact that Luther never was a democrat—and after the Peasants' War was less than ever inclined to be one—and also because he found the legatees of the old *jus episcopale* in the princes rather than in the people. Thus the organization of the German Protestant Church had grave defects. It was makeshift, oligarchic, and



Martin Luther. Left, the Cotta house at Eisenach, where the reformer spent part of his youth; right, the house at Eisleben where he was born

erastian. Luther—a man of genius in root principles of evangelical religion—had really no principles here, and simply took what the situation seemed able to afford. The Calvinistic Reformed Church was organized very differently.

In worship, as distinguished from government, the Lutheran Church was more free to follow its religious ideals. In some things—such as altars, candles, liturgy, clerical dress—Luther was conservative. Also the great Church festivals were retained. But the two characteristic features of Lutheran church worship were the place given to the preaching of the word and the congregational singing of hymns. The former is notable all through the Reformation beyond Germany as well as in it; but congregational singing was pre-eminently characteristic of Lutheranism. The medieval Roman Church had magnificent hymns, but these were sung by the choir. Lutheran hymns—Luther wrote about 40—gave the people a new voice, and were a notable feature in the reformed cultus. Luther's most famous hymn—*Ein' feste Burg*—spread all over Germany and became a national chorale.

#### Basis and History

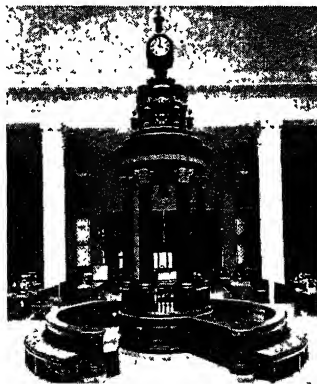
Theologically, the fundamental standard of the Lutheran Church is the Confession of Augsburg of 1530. Its doctrinal matter is mainly Luther's, but its style and tone breathe the more conciliatory spirit of Melancthon. The Lutheran Church still bears the title of "the Church of the Augsburg Confession."

The history of the Lutheran Church is complicated, but its main phases may be mentioned. After its formative period, Lutheranism suffered from a period of theological strife and then sank into a moribund orthodoxy. The movement known as pietism, beginning in the latter part of the 17th and continuing up to the middle of the 18th century, served to deliver it from this. The father of German pietism was Spener (d. 1705), and under him it was both a revival of evangelical and practical religion, and an effort to make church organization less dependent on the secular authority and more the responsible work of the Christian people. But the royal supremacy continued to assert itself, sometimes in a tolerant and even indifferent spirit, as when Frederick the Great declared that all religions are equally good, and sometimes with a narrow goal, as when Frederick

William II tried to penalise Socinianism and deism.

Under Frederick William III, efforts were made to reorganize the Church with a view to a union between the Lutheran and the Calvinistic Confessions, both of which had their adherents in Germany. The king's appeal for this in his proclamation of 1817—about the time of the tercentenary of the Reformation—evoked widespread response, and various unions were realized in the smaller German states. In Prussia more difficulties were encountered, which were only partially solved when, in 1817, a union was accomplished under the name of the Evangelical United Church.

In the German empire created by Bismarck in 1871, the Lutheran Church was a state-established, state-controlled body; but it exhibited a vigorous life, both intellectually and religiously, and had within its borders both a



Lutine Bell. Bell salvaged from the wreck of the frigate Lutine and now in the underwriters' room at Lloyd's. The bell is tolled on the receipt of important news

liberalism which extended to rationalism, and an evangelicalism which included pietism. On the fall of the Imperial regime in the First Great War, a change came over the relations of Church and state under the Weimar republican constitution; but this government was short-lived, and National Socialism arose under Hitler. In the early days of the Nazi movement, Christianity was recognized as the 24th article of the party programme; but as Hitlerism developed its anti-Christian character was unmistakable, and the Nazi state more and more sought to use the Church for its political ends. This led to much division within the ranks of the Church, whose religious work was carried

on under great difficulty. But resolute resistance was offered by many pastors and congregations; and this saved the soul of the Church for the day of liberation which came with the collapse of Nazism in 1945. See Calvinism; Reformation.

#### F. Carnegie Simpson

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**Lutine, LA.** A French frigate captured by the British. Renamed H.M.S. Lutine, she sailed in 1790 for Texel, off the Netherlands coast, carrying nearly £1,000,000 in specie. The ship was wrecked, there being only one survivor. Dutch fishermen obtained thousands of pounds' worth of gold from the wreck, and between 1857 and 1861 about £40,000 was recovered. In 1911 an attempt was made to bring up the bulk of the treasure, but after moving a million tons of sand only 5 grains of gold were recovered.

**Lutine Bell.** Bell of the old frigate Lutine (v.s.). During the attempts to recover the treasure lost when the vessel was wrecked, the ship's bell was salvaged and afterwards suspended in the rostrum of the room at Lloyd's, London, where the main business of insurance is transacted. The receipt of important news, such as a wreck or the arrival of an overdue vessel, is announced by tolling the bell.

**Luting.** For the details of this mixture, used for filling orifices and cracks, see Lute.

**Luton.** Mun. bor. and market town in Beds, England. It stands near the source of the Lea, 30 m.

by rly. N.W. of London. The chief building is the parish church of S. Mary, a large cruciform building, partly Early English, with a unique hexagonal baptistry. A new town hall in classic design, opened in 1936, replaced one burned down during the peace celebrations of July, 1919. Luton was once the centre of the strawplait industry, and the manufacture of ladies' hats is still a staple trade, though straw is not now a major material. It has light engineering products, including motor cars, ball-bearings, precision machinery, and industrial



Luton arms



Luton, Bedfordshire. The Town Hall, opened 1936. It was built to replace a former hall, destroyed by fire in July, 1919

chemicals. Luton is a borough constituency. There are grammar schools for girls and boys. Market days, Mon. and Sat. At Luton Hoo mansion, built by Robert Adam for the 3rd earl of Bute, 1762, are an art gallery and the Wernher Collection of tapestries, furniture, jewelry, etc., opened to the public by Sir Harold Wernher in 1950. Pop. est. 108,000.

**Lutsk** (Polish, Luck). Town of Ukraine S.S.R., in the region of Volhynia, formerly a Polish co. It is 40 m. E. of Vladimir, on the Styr and the rly. from Kazatin to Brest-Litovsk. There are cloth factories, tanneries, and paper mills. In the 11th century Lutsk was the capital of an independent principality; after passing into the hands of the Lithuanians and Poles, it was annexed to Russia in 1791.

The battles of Lutsk in the First Great War took place in 1915 and 1916. Following up strongly from the capture of Kovel and Vladimir Volynsk, an Austro-German force took Lutsk, Aug. 31, 1915. On the night of Sept. 7-8 the Russians launched a counter-offensive; on Sept. 23 they captured vital positions N. of Lutsk, and the town again fell into their hands. They had outrun their lines of communication, however, and were forced to retire on Sept. 28. On June

4, 1916, Russians in the Volhynia area attacked N.W. towards Lutsk and S.W. towards Brody and Lemberg (now Lwow). Lutsk fell to them within two days, a gain of 20 m.; pushing on, they penetrated to within 20 m. of Kovel and the same distance of Vladimir Volynsk.

After the partition of Poland by Germany and Russia in Sept. 1939, Lutsk was included in the Russian zone. The Germans captured it at the end of 1941 and held it until Feb. 5, 1944, when their garrison was driven out by units of the 1st Ukrainian army. It went, with the rest of Volhynia, to Russia by the Russo-Polish treaty signed in Aug., 1945.

**Lutterworth.** Market town of Leicestershire, England. It stands on the Swift, 7 m. N.E. of Rugby and 90 m. by rly. from London. It is chiefly famous for its associations with John Wycliffe, rector here 1374-84. S. Mary's church, a fine old building, contains the pulpit and other relics of the reformer. There is an obelisk to his memory in the town. Market day, Thursday. Pop. 3,000. See Wycliffe, John.

**Luttrell Psalter.** English illuminated manuscript of the 14th century. Executed about 1342 by Sir Geoffrey Luttrell, it

is one of the most interesting illuminated manuscripts and is preserved in the British Museum. It is illustrated with a lovely series of miniatures, in glowing colours, depicting sports, pastimes, customs, business methods, and every aspect of country life.

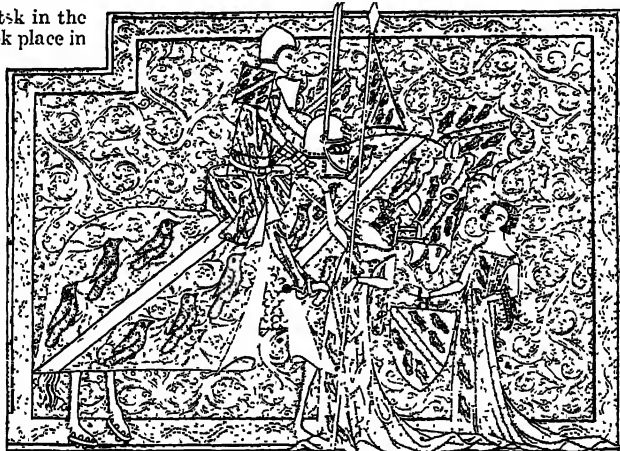
**Lutyens, Sir Edwin Landseer** (1869-1944). A British architect. Born March 29, 1869, he studied at the R.C.A. and began his career in 1888. During the 1890s he designed country houses and, in collaboration with Gertrude Jekyll, gardens notable for fine sense of detail. His chief works in London included Hampstead Garden



Lutterworth, Leicestershire. Parish church of S. Mary, restored and enlarged since the time of Wycliffe  
Valentine

Suburb, S. John's Institute. Tufton St.; houses in Little College St. and Smith Sq., Westminster; Britannic House, Finsbury Sq.; Midland Bank, Piccadilly; elevation of Midland Bank, Poultry; and fountains in Trafalgar Sq.

In 1912, when a member of the advisory committee to the government of India, Lutyens, with Sir Herbert Baker, designed the site and architectural scheme of New Delhi. This grandiose conception, like the R.C. cathedral at Liverpool, ranks among his most ambitious achievements, though in the U.K. he is associated chiefly with domestic architecture, and has been described as the innovator of the modern country house. As an architect, he was said to have evolved from the picturesque to the monumental.



Luttrell Psalter. Illumination from the Psalter, showing Sir Geoffrey Luttrell going out to uphold the family honour in a tournament. He is equipped by his wife, who hands him helmet and pennon, while another lady carries the Luttrell shield

The Cenotaph in Whitehall (reputed to have been worked out on a scribbling block during luncheon)



Sir E. L. Lutyens,  
British architect  
Russell

expresses his sense of a national monument. Other war memorials included those at Villers-Bretonneux and Manchester. He designed Hampton Court bridge; the tomb of George V at Windsor (with Sir W. Reid Dick as sculptor); an open-air memorial to George V, Windsor; the Queen's doll's house; and Benson Court, Magdalene College, Cambridge.

Lutyens was elected A.R.A. in 1913 and R.A. in 1920, becoming P.R.A. in 1938 in succession to Sir William Llewellyn, only the third architect to fill that office. He received a knighthood in 1918 and was awarded the O.M. in 1942, the first architect member. He died Jan. 1, 1944. *Consult* E.L., An Appreciation in Perspective, R. Lutyens, 1942.

**Lützen.** Town of Saxony, Germany, about 12 m. S.W. of Leipzig. It is famous as the scene of two great battles. On Nov. 16 (N.S.), 1632, Gustavus Adolphus, king of Sweden, defeated the Imperialists under Wallenstein, but was himself killed. On May 2, 1813, Napoleon defeated the Prussians and Russians.

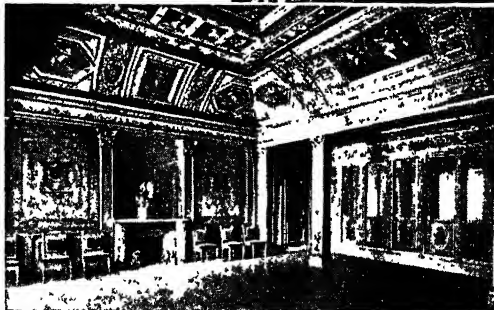
In 1632 Gustavus was campaigning in Germany. With 20,000 men he marched from Naumburg to pick up a contingent of Germans, for Wallenstein was near Lützen, and a battle was soon almost inevitable. On Nov. 15 news that Wallenstein had sent off a considerable force on a plundering expedition caused Gustavus to change his plans. He turned towards Lützen to find and to fight a weakened enemy.

The enemy was ready. On Nov. 16 Wallenstein's army, also about 20,000 strong, was drawn up near Lützen. The infantry were in masses in the centre; the cavalry were on the wings; the artillery were in the front. The Swedish army had its trained infantry in smaller groups, but it, too, had cavalry on the wings and artillery in front. After some artillery exchanges, the battle was joined. The Swedish horse dashed against their foes and put them to flight, but the infantry, who had also taken the initiative, were not able to equal that performance. A

stout fight was waged at close quarters, and while this was proceeding Gustavus, leading his men to a threatened part of the line, was killed. Wallenstein's men then met with a temporary success until Bernhard of Saxe-Weimar, having taken over the command, succeeded in rallying the Swedes, and the lost guns and the ground were recaptured. The last stages of the battle began with the charge of Wallenstein's cavalry, just returned from their foray. They met with some success, but their leader, Pappenheim, was killed. The Swedish reserves then advanced,

to resist attack; waiting till both sides were exhausted, he then sent forward 100 guns to make a gap with case shot in the enemy lines and, pushing forward his reserve, finished the battle.

**Lützow, FRANCIS, COUNT** (d. 1916). Bohemian historian. He belonged to a noble family of that country, but on his mother's side



Luxembourg, Paris. Salle du livre d'or, gallery in the palace, where the golden book of records of the reigning family was formerly kept. Walls and ceiling were decorated by pupils of Rubens. Top, right, south front of the palace

and their charge decided the day, for the Imperialists fled. The site is marked by a chapel and other memorials. (*See* Gustavus Adolphus; Thirty Years' War.)

Before the second battle of Leipzig Napoleon's huge conscript army of combined nations had been reduced to a cipher by his Russian campaign, but he had, by the spring of 1813, 200,000 men moving towards the Elbe to meet the allied concentrations. He assumed command at Erfurt, April 25, and moved his advance guard on Lützen. The allied commander, Wittgenstein, designed to surprise him by an attack on the advance guard with a small force, while the remainder of his army was directed against Napoleon's right and rear. The combined Prussian and Russian attack began about 9 a.m. just as the head of the French main body was reaching Lützen. At 11 a.m. Napoleon heard Wittgenstein's guns opening the attack on his right rear, and, divining his plan, he galloped to the scene of action, and with his old promptness planned a counter-scheme. He organized a battle reserve, and disposed the remainder

was of English descent. He was a member of the Austrian Reichstag, 1885-89, and from 1881 to his death was chamberlain to the emperor of Austria. Much of his time was spent in England, and he held the Ilchester professorship in Slavonic languages at Oxford. He wrote on Bohemia in English and his works include *Bohemia: An Historical Sketch*, 1896; *History of Bohemian Literature*, 1899; *Life and Times of Master John Hus*, 1909; and *The Hussite Wars*, 1914. He died Jan. 13, 1916.

**Lützow, LUDWIG ADOLF WILHELM, BARON VON** (1782-1834). German soldier. Born May 18, 1782, he entered the Prussian army in 1795 and served in it until 1808, having fought at Auerstadt and elsewhere against Napoleon. In 1811 he returned to the service and in the war of liberation raised a corps of irregulars, known as the black Jaegers, which served against France until 1814. Lützow was with the cavalry of the regular army at Waterloo, and retired in 1830. He died Dec. 6, 1834. A German battle cruiser, Lützow, was sunk in the Jutland battle, 1916.

**Lux.** Unit of illumination, being the normal illumination produced from a light source of one candle power at a distance of one metre.

**Luxembourg.** Most southerly province of Belgium. It comprises the Belgian part of the Ardennes Highlands, and is the

most scantily peopled portion of the country. Iron is mined, slate quarried, and cast-iron manufactured. It was severed from the grand duchy of Luxembourg in 1839. Area, 1,706 sq. m. Pop. 216,745.

**Luxembourg.** French palace, situated on the left bank of the Seine in Paris. It was designed in 1615 by Jacques de Brosse, for Marie de' Medici, and erected on the site of a mansion purchased in 1612 from the duc de Piney-Luxembourg. De Brosse was instructed to copy the Pitti Palace at Florence, but the design, with its two bold flanking pavilions, bears little resemblance to the latter. The queen adorned the palace in the costliest manner, but after her death it was neglected. In 1836 the palace was almost entirely remodelled by A. de Gisors, who extended the garden façade by more than one-third, and rearranged the interior. The Musée du Luxembourg, famous for its collection of modern works of art, is on the E. side of the building. The Luxembourg Gardens, originally laid out by J. de Brosse, are extensive and beautiful.

**Luxembourg, François HENRI DE MONTMORENCY - BOUTEVILLE, DUKE OF (1628-95).** French soldier. Born Jan. 8, 1628, in Paris, he was related to the Condé family, and was educated with his cousin, the great Condé (q.v.). To escape the consequence of



François Luxembourg, French soldier

their share in the Fronde, the two entered the Spanish service together. In 1659 François reentered the French army and soon, having married an heiress, was made duke. In the war that began in 1672 he was in command of a force which defeated the Dutch under William of Orange, but his reputation was made by a retreat he conducted from Utrecht when followed by superior forces. He captured Valenciennes during the war that ended in 1678. On the renewal of war in 1689 Luxembourg, regarded as France's first soldier, was put in command in Flanders, where he beat his life-long adversary, William of Orange, at Steinkirk, Aug. 3, 1692, and Neerwinden, July 29, 1693. He died in Paris, Jan. 4, 1695.

**Luxembourg.** Country and a grand duchy of Europe. It comprises the S. portion of Ardennes

Highlands, draining to the Moselle, which forms its S.E. frontier. Belgium lies to



Luxembourg arms

the N. and W., France to the S., and Germany to the E. Its area is 999 sq. m. The chief economic importance of the state is in the S.W., where the Minette iron-field stretches into France. Up to 1914 Belgium imported quantities of iron ore from here, while a good deal more was turned into pig iron and exported to Germany. Three-fifths of the area is cultivated; oats and potatoes being the main crops, then wheat. The vine is grown in the Moselle valley; and horses and cattle are reared. The chief river is the Sure or Sauer. In addition to Luxembourg, the capital, the chief towns are Esch, Differdange, and Dudelange. The people are nearly all Roman Catholics. The govt. is in the hands of a council of state and chamber of 5 deputies. Pop. 281,572.

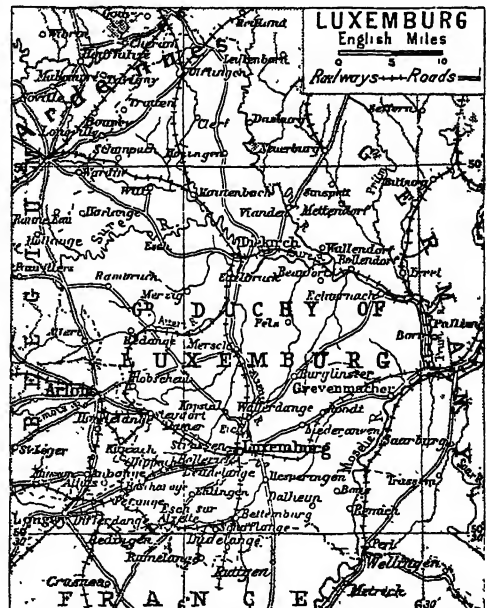
Luxembourg originated in a county, created in the 11th century, and taking its name from its chief town. Its counts became so important that in 1308 one of them, Henry, was chosen emperor, and in the 14th century the house of Luxembourg was one of the chief families of Europe. To it belonged John, king of Bohemia. In 1444 the duchy, as the county had been since 1354, became part of Burgundy and thus later passed to the emperor Charles V. It was a possession of his descendants, the kings of Spain, from 1555 to 1713, when it passed by arrangement to Austria. The French conquered it 1795.

The congress of Vienna, 1815, made it a grand duchy, and gave it as a personal duchy to William I of the Netherlands in exchange for the Orange-Nassau possessions in Germany. In 1830

Luxembourg, like the S. Netherlands, rebelled against William; and when in 1839 the powers recognized Belgium as a separate country, French-speaking W. Luxembourg (see Luxembourg) was given to her, E. Luxembourg remaining a grand duchy with William as its duke. This grand duchy, the present Luxembourg, joined the German customs union in 1842. During 1815-66, the grand duchy, large or small, was a member of the German confederation. In 1867, by the treaty of London, the powers declared it independent, and guaranteed its neutrality.

On the death of William III in 1890, the Netherlands passed to his daughter Wilhelmina; but at that time succession in Luxembourg was restricted to males, and the grand duchy went to Adolphus (d. 1905), a member of the elder branch of the house of Nassau. He was succeeded by his son William (d. 1912), and when it became apparent that with him the male line of the Nassau family would end, a law was passed allowing the accession of females. Charlotte (b. Jan. 23, 1896), second of William's six daughters, became grand duchess on the abdication of her sister Marie, Jan. 9, 1919.

Although Germany was among the signatories of the treaty of London, 1867, she invaded Luxembourg, simultaneously with her attack on Belgium, in 1914. A de-



Luxembourg. Map of the grand duchy, showing its position between Germany, France, and Belgium



tachment of German troops tore up the rails at Trois Vierges on Aug. 1, 1914, and during the night strong forces entered Luxembourg, asserting that the French were marching against it. A proclamation announced that the occupation would be only provisional; personal and religious liberty would be respected; iron discipline of the German occupying forces would be maintained, and all requisitioned goods paid for in cash. The Germans broke all their promises. Luxemburgers were seized as hostages, forcibly enrolled in the German army, condemned to death for alleged offences, though as far as is known none was executed. The country was stripped of food and raw materials, and was not evacuated until the armistice, Nov. 11, 1918.

By the treaty of Versailles, Luxembourg ceased to belong to the German customs union. In 1921 it concluded a customs union with Belgium.

The Germans again invaded undefended Luxembourg on May 10, 1940. The standing army of 250 could offer no resistance, and ruler and govt. fled to France, then to Canada, and in 1941 went to London. On July 28, 1940, a German civil governor of Luxembourg was appointed. The German language was made compulsory; Luxembourg was again included in the German customs union; and the Nazi system of education was introduced. On Aug. 30, 1942, the grand duchy was annexed to the Reich. The people endured worse hardships than in the First Great War; young men were called up for German labour service or service in the army, and one in ten of the pop. was sent to forced labour or a concentration camp.

On Sept. 10, 1944, troops of the U.S. 1st army crossed the frontier, the Germans retiring before them. They liberated the city of Luxembourg intact the same day. The German counter-offensive in the Ardennes (*q.v.*) made part of Luxembourg the scene of bitter fighting, Dec., 1944-Jan., 1945, and delayed the return of the grand duchess until April. During the Second Great War, Luxembourg changed from a rich to an impoverished country, with thousands homeless, and a third of the land devastated

In Sept., 1945, Luxembourg was given a zone of occupation in the Eifel dist. of Germany.

The Luxembourg govt., during its exile in London, entered in 1944 into a convention with the Netherlands and Belgian exiled govts. for a post-war customs union of the three countries. Ratification in 1947 brought the "Benelux" customs union into formal existence on Oct. 29 (*see* Benelux in N.V.).

Luxembourg participated in the European Recovery Programme, in the Brussels treaty, 1948, and in the North Atlantic treaty, 1949.

**Luxembourg.** Town and capital of the grand duchy of Luxembourg. It stands on the Alzette. The chief

buildings are the churches of S. Michael and Notre Dame and the palace. The church of S. Quirin is hewn out of solid rock. At one time Luxembourg was regarded as one of the strongest fortresses in Europe, but its fortifications were destroyed in 1867. The chief industries are iron

and steel working, brewing, and tanning. The town lies partly in the valley, with the older portion of the plateau above, and many streets zig-zag up the slopes or ascend by steps. The name means little town. Pop. 59,013.

**Luxembourg, Rosa** (1870-1919). German socialist. Of Polish Jewish origin, she was born at Zamosc, March 5, 1870, niece of one of the founders of the Bank of Poland. Having studied economics at Zürich, she became a professor in economic science, but getting into trouble with the authorities, escaped deportation to Siberia by flight to Berlin, where in 1898 she married Gustav Lübeck to secure German citizenship. Professor of economics in Berlin, she won notoriety as Red Rosa. She joined forces with Karl Liebknecht and was the founder of Polish social democracy. A cripple, small of stature, but a speaker and writer whose violence was almost equalled by her ability, she was long on the editorial staff of *Vorwärts*. During the First Great War she was imprisoned for anti-militarism. Liberated after the revolution of Nov., 1918, she took a leading part in the Spartacist (Communist) movement and, being arrested with Liebknecht in Berlin on Jan. 15, 1919, by a patrol of the

civic guard, was killed, it was believed, by the mob. Her study of the Russian revolution was issued in 1922. *See* Spartacus.

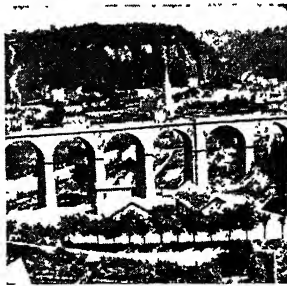
**Luxeuil.** Town of France, in the dept. of Haute-Saône. It is 10 m. N.W. of Lure, at the base of the Vosges. The mineral baths were known to the Romans. There are a fine 14th century church and ruins of a monastery founded in 590 by S. Columbanus.

**Lux Mundi** (Lat., light of the world). Name given to a collection of theological essays published in 1889. The editor was Charles Gore, then head of Pusey House, Oxford, who wrote one on The Holy Spirit and Inspiration. The book was an attempt to permeate the high church school with the results of modern Biblical criticism, and as such was violently assailed by the more conservative churchmen. *See* Oxford Movement.

**Luxor** (Arab. *el-Kusur*, the palaces). Town of upper Egypt. Situated on the E. bank of the Nile, 418 m. by railway S.S.E. of Cairo, it gives its name to the Luxor dist. of the Qena prov. It is a winter resort for invalids, with hotels, hospitals, and churches, and is the tourist centre for visitors to the Theban plain.

Luxor, with the adjacent Karnak, comprises the ancient city of Thebes. The two parts were connected, under Amenhotep III, c. 1400 B.C., by a paved avenue  $1\frac{1}{2}$  m. long, flanked by stone crosphinxes or recumbent rams. The Luxor temple, 852 ft. long, begun by that monarch in honour of Amon, Mut, and their son Khons, comprises a court 148 ft. by 168 ft., with double rows of clustered papyrus-columns on three sides, confronting a vestibule whose roof was supported by four rows of eight similar columns. Beyond this a group of smaller chambers includes a sanctuary rebuilt by Alexander the Great, and another converted into an early Coptic church. In front of the court is a colonnade of seven pairs of columns 52 ft. high.

Before the original fane Rameses II erected a court, 187 ft. by 168 ft., surrounded by 74 papyrus-columns, and now encumbered in one corner by a 7th cent. tomb-mosque. Standing colossi of the king, in red and black granite, are placed between some of the columns, and seated figures, 25 ft. high, of himself and his queen flank the portal to the colonnade. The massive pylon is sculptured with reliefs depicting the Hittite campaign, and with the poetical



Luxembourg. Great viaduct, built in 1861 across the Pétrusse valley



narrative of the Kadesh battle called the epic of Pentaur. The temple-walls bear spirited reliefs of royal and religious scenes.

In front of the pylon stood six colossal statues of Rameses II, of which two sitting ones, 45 ft. high, and one of the four standing ones, are preserved. Of the two pink



Gard, Aug. 5, 1578, as a young man he was intimate with Louis XIII. In 1617 he helped the king in the intrigue against the queen mother, Marie de' Medici, being largely responsible for the assassination of her favourite, Concini. His influence over Louis was supreme, and after negotiating the treaty of Angoulême, 1619, and suppressing a Huguenot rebellion, he became constable of France, 1621. At once he undertook a campaign against the Huguenots, but rapidly succumbed to a fever on Dec. 14.

**Luz** (Heb., almond tree). In the O.T., the old name for Bethel.

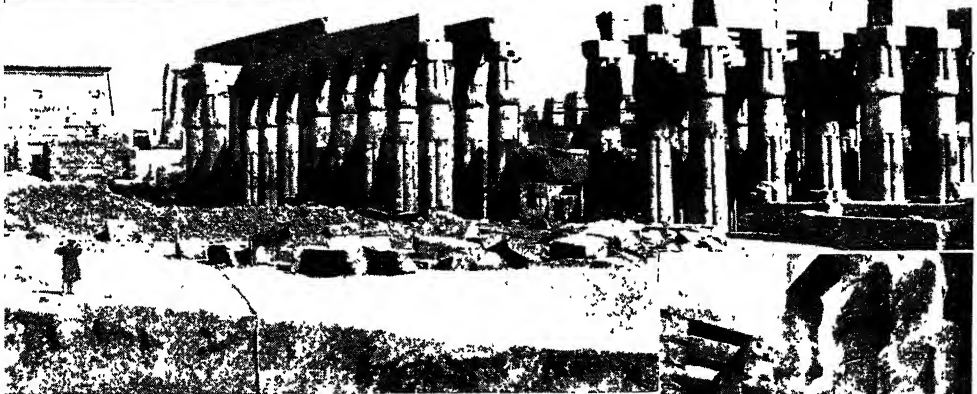


Duc de Luynes,  
French courtier

river. W. of the valley the Zambales range has a mean elevation of 4,000 ft.; E. of it the Eastern Cordillera, called in its N. portion the Sierra Madre, lies close to the coast, and is continued through the isthmus to the S.E.; N.E. of it the Caraballos Sur connects the S. ends of the Sierra Madre and the Caraballos Occidentales.

The S. peninsulas have a backbone of high ground, from which rise isolated peaks, of which the important is the still active volcano of Mayón, a perfect cone, 7,916 ft. high. The land rises steeply from the coasts, and the coastal slopes on the E. receive annual rainfall of over 100 ins.

Luzon was settled by Spaniards in the 16th century and was a Spanish colony until 1898, when it was ceded to the U.S.A. In 1946 it became part of the newly-formed Philippine republic. The



Luxor, Egypt. 1. Obelisk of Rameses II. 2. Colonnades in the Court of Amenhotep III. 3. Colossal statues of Rameses II, between the columns of his courtyard

granite obelisks one, 82 ft. high, remains; the other occupies a position in the Place de la Concorde in Paris. See Egypt; Karnak.

**Luxullianite.** Rock of striking aspect found near Luxulyan, Cornwall, England. It consists essentially of pink potash-feldspar, black tourmaline, and quartz. A normal porphyritic granite with feldspar, mica, and quartz was attacked by boron-rich fluids which introduced tourmaline at the expense of original mica and some of the feldspar. Luxullianite has been used as an ornamental stone and is of petrologic interest, but little now remains.

**Luynes, CHARLES D'ALBERT, DUC DE** (1578-1621). French courtier. Born at Pont St. Esprit.

or of a village near it on the boundary of Ephraim. It was also that of an unidentified Hittite city.

**Luzon.** Largest of the Philippine islands. It consists of two sections, one, roughly rectangular, lying N.-S., and the other, an irregular group of connected peninsulas, lying E. and S.E. of Lamón Bay. With an area of 40,420 sq. m., it is 138 m. at its widest point and 8 m. at its narrowest.

In the N. section a valley, 150 m. long and 50 m. wide, extends from Lingayen Gulf to the lake Laguna de Bay. On the W. coast is Manila Bay, the best harbour in the Far East, which has an area of 770 sq. m., and a maximum depth of 150 ft. Connecting Laguna de Bay and Manila Bay is the Pasig

island is divided into 24 provinces and has a pop. of 3,800,000, of whom some 200,000 remain pagan and uncivilized. The population is of mixed race, ranging from the westernised Tagalogs to the Negritos, a tribe of pygmy head-hunters in the N. English or Spanish is spoken by the majority of the people, but the official language, like that of the rest of the

Philippines, is based upon Tagalog, a Malayan dialect. Tobacco, cotton, hemp, copra, rice, sugar, cacao, pineapples, and bananas are the principal agricultural products; there is considerable cattle raising to the S.W. of Laguna de Bay.

Baguio, the summer capital, which is the only chartered city besides Manila, the administrative capital, is the centre of the gold-mining area. Copper, iron, and coal are also mined. In the central area of the W. coast is a chrome deposit, estimated to be the world's largest, which has not yet been developed.

Gen. MacArthur was in command of combined Filipino-U.S. defence forces on Luzon when the Japanese invaded it on Dec. 10, 1941. He succeeded in holding the enemy in check until Dec. 22, when some six to eight Japanese divs. landed in Lingayen gulf, followed by steady reinforcements. Manila, declared an open city Dec. 25, bombed severely from the air next day, was entered by the Japanese, Jan. 2, 1942, U.S. and Filipino forces having retired to Bataan pen., where they held out until April 10, and the island of Corregidor, which surrendered only on May 6. U.S. forces returned to Luzon on Jan. 9, 1945, recapturing Manila in a battle lasting from Feb. 4 to 24. Isolated groups of Japanese were still holding out in the Sierra Madre when Japan surrendered in Aug. Luzon, particularly Manila and its neighbourhood, suffered terrible devastation during the fighting. For a fuller account of the war in the Philippines, see *Pacific War*; see also *Bataan*; MacArthur, D.

**Lvoff, GEORGE EUGENIEVITCH, PRINCE** (1861-1925). A Russian statesman. Born Oct. 21, 1861, and educated at Moscow university, he devoted his energies to educating the peasantry. In the famine year of 1891 he served on relief committees, and during the Russo-Japanese War was head of the Red Cross organization in Manchuria. In 1904 he came into prominence in connexion with the Zemstvo congresses which started the constitutional movement. To the first Duma he was returned as a leader of the Constitutional Democratic party known as the Cadets. For signing the manifesto at Viborg calling upon the people to refuse taxes, he was debarred from sitting. Prime minister in the provisional government 1917, he resigned owing to differences with the Socialists on the land question.

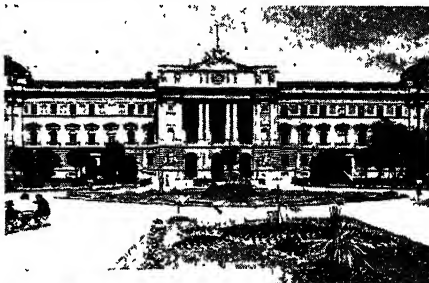
He left Russia on the advent of the Soviet regime, visiting Britain and the U.S.A., and died March 7, 1925.

**Lvoff, ALEXIS FEODOROVITCH** (1799-1870). Russian composer. Born June 6, 1799, he entered the army and attained the rank of general. Meanwhile he had given much time to music, and in 1836 succeeded his father as director of music at the imperial chapel, St. Petersburg. He was an excellent violinist and is remembered as the composer of the pre-revolutionary national anthem of Russia. He died Dec. 16, 1870.

**Lvov** (Polish *Lwow*; German *Lemberg*). City of the Ukraine S.S.R. which also gives its name to a region. Lvov, which means the City of Lions, lies in the eastern district between the San and Zbruecz rivers. Situated between two low ridges on the great east-west route from Cracow to Kiev, it was the capital of Red Ruthenia, part of the early Polish

whelmily Ukrainian in population, the city remained predominantly Polish. At the partition of Poland in 1772 Lvov was renamed Lemberg and became capital of the Austrian province of Galicia.

Lvov was the scene of bitter fighting in the First Great War, the first battle for it lasting from Aug. 31 to Sept. 2, 1914, when it fell to the Russians with 100,000 prisoners. Restoring its old name of Lvov, the Russians set up an administration, but in June, 1915, it was reoccupied by the Austrians during Mackensen's advance. Frequent riots occurred in 1917 and 1918, fomented by separatists, but the city passed into Russian



Lvov, Ukraine S.S.R. Partial view of the city with the hill Wysoki Zamek in the background. Above, right, main university building, formerly the Galician Diet

possession until 1923, when it was ceded to Poland.

Under Polish rule, Lvov was further developed as a cultural and commercial centre and became a link between eastern and western Europe. By 1931 its pop. had reached 312,000. Even under foreign domination

state, until it passed under the rule of the duchy of Kiev in the 10th century. In 1240, Lvov was rebuilt and fortified by Danilo, duke of Kiev, as part of the defence system against the Tartar invasion. It was reunited with Poland in 1340 and further fortified, while a natural barrier of hills made it practically inaccessible from the east. It became one of the bastions of western civilization, and successive invasions by Tartars, Turks, and Cossacks were halted at its walls.

In 1380 it was granted the right of emporium, or free trade, and in the middle ages it became an important trading centre, its population including Germans, Greeks, Jews, Tartars, and Armenians. Although in a territory over-

it had been a centre of Polish learning, the university having been established in 1634, while the Lvov Polytechnic was the oldest Polish technical institution. The Ossolineum library contained over a million volumes and there were numerous museums and theatres. It was the seat of three archbishops, Roman Catholic, Greek Orthodox, and Armenian Catholic. There were also a number of synagogues, most of them masterpieces of internal architecture. Under the Poles, considerable industry was established.

At the outbreak of hostilities between Germany and Poland on Sept. 1, 1939, Lvov was subjected to three days' intensive air attack, devastating the principal buildings and large areas of the city.

Surrounded on Sept. 19, the city capitulated three days later when the Jewish population was annihilated. On the partition of Poland between Germany and Russia, Lvov passed to the latter. Following the outbreak of the Russo-German war, Lvov was taken by the Germans on June 30, 1941. It was recaptured by Ukrainian forces of the Red army on July 27, 1944, and passed to the Ukraine S.S.R. under the Russo-Polish treaty of Aug., 1945.

**Lyall, Sir ALFRED COMYN** (1835-1911). A British administrator. Born at Coulsdon, Surrey, Jan. 4, 1835, he went to Eton and Haileybury, entered the Indian civil service, 1856, and served during the Mutiny. Minor appointments led to his becoming lieutenant-governor, N.W. Provinces and Oudh, 1882-87, and then a member of the India council in London until 1902. Lyall founded the new university of Allahabad, 1887. Knighted in 1881, he died at Farringford, I.O.W., April 10, 1911. His series of Asiatic Studies, 1882-99, were remarkable for their insight into Indian native rites and customs and for their value to the student of religion and mythology.

**Lyall, EDNA.** Pseudonym of Ada Ellen Bayly (1857-1903), a British novelist. Born at Brighton, March 25, 1857, she became an active social and religious worker. Among her novels are *Won by Waiting*, 1879; *Donovan*, which made her name, 1882; *We Two*, 1884,



Edna Lyall,  
British novelist  
Elliott & Fry

in which Charles Bradlaugh is thinly disguised; *Doreen*, the hero of which is Michael Davitt, 1894; *The Hinderers*, 1920. A woman of strong political convictions, she was a keen Home Ruler and supported Bradlaugh in his contest with the house of commons, though she had no sympathy with his religious views. She died Feb. 8, 1903.

**Lyautey, LOUIS HUBERT** (1854-1934). French soldier and administrator. Born at Nancy, Nov. 17, 1854, he passed through St. Cyr and in 1875 joined the army as a lieutenant of *chasseurs*. He was on active service in Algeria, 1880-82; Tongking, 1894-97; and Madagascar, 1897-1902. Then he was in Algeria, 1903-11, becoming general of division in 1907.

He was resident commissary-general in Morocco, 1912, and held the post until 1925, with one interval in 1916-17 as minister of war. In 1921 Lyautey received his marshal's baton without having ever served in France. He built up a colony with a great economic future and was probably the outstanding figure in the creation of French Africa. On July 27, 1934, he died. A Maurois wrote his *Life*, Eng. trans. 1931.



L. H. Lyautey,  
French soldier

**Lycabettus.** Hill in Greece. A conical rock to the N.E. of the city of Athens, it is 900 ft. above sea level. On its S.W. slope an aqueduct, constructed by Hadrian and Antoninus Pius and repaired during the 19th century, is still used for the water supply of Athens. The modern name is Mount St. George (*Ha'ios Georgios*), to whom a chapel on the summit is dedicated. See Athens.

**Lycanthropy** (Gr. *lykos*, wolf; *anthrōpos*, man). Term for the power popularly attributed in some countries to certain persons of turning themselves into wolves. In Great Britain such persons were known as were-wolves. The term is also used in folklore in a wider sense for the supposed transformations of men and women into other beasts, as bears or foxes. In pathology, lycanthropy is a form of mental disease in which the patient believes himself to be an animal and generally behaves like one. See Were-wolf.

**Lycaon.** In Greek mythology, a king of Arcadia, noted for his impiety. Zeus came down to earth to visit him, and Lycaon, to test his divinity, had the effrontery to offer him a dish of human flesh. For this insult he was changed into a wolf, as were all, save one, of his 50 sons.

**Lycænia.** Ancient district of Asia Minor. It was bounded N. by Galatia, W. by Phrygia, S. by Cilicia, and E. by Cappadocia. Its capital was Iconium, and its other chief towns were Derbê, Lystra, and Laodicea, all of which figure in the N.T., Acts 14, etc. It is part of the Turkish vilayet of Konieh.

**Lycastê.** Genus of handsome orchids. They are natives of tropical America. Some species grow in the ground, others on trees. The lip of the flower is furnished with a transverse fleshy appendage. *L. skinneri*, from Guatemala, has

large, white, solitary flowers (4 to 6 ins. across) suffused and blotched with rosy-crimson. See Orchid.

**Lycée** (Lat. *lyceum*). The name given in France to secondary schools under state control.

**Lyceum.** Gymnasium sacred to Apollo Lycius. Just outside the city of Athens on the S.E. side, it was famous as the place where Aristotle and his successors taught their philosophy. Hence the name was applied to the school in which Aristotelian philosophy was taught, and is now used for various educational institutions.

**Lyceum Theatre.** A former London playhouse in Wellington Street, Strand. On this site, purchased in 1765, the architect, James Payne, erected a building to house the exhibitions of the newly incorporated Society of Artists; the



Lyceum Theatre. The former London playhouse, made famous by Irving, and in 1945 converted into a dance hall

society became insolvent, and the building was sold and the back part converted into a theatre. Various entertainments were given in the place, including, in 1802, Madame Tussaud's first exhibition of wax-works. In 1809 the theatre was licensed and renamed the English Opera House. It was rebuilt in 1816 and burnt down in 1830.

Another theatre was put up on the site and opened in 1834, with opera. Balfe, the Keeleys, Fechter, and the Batemans were among those in management here, but the house is chiefly associated with Irving, who was its manager 1878-1902, and in conjunction with Ellen Terry made it world-famous by his Shakespearian productions. Irving's last performance here took place July 19, 1902. The theatre was then entirely reconstructed, and the new building, with the

old façade preserved, was opened in 1904. From 1907 The Lyceum was the chief home of melodrama in London under the management of the brothers Walter and Frederick Melville. It had a lavish annual pantomime. Its last night was March 11, 1939. Bought by the L.C.C., its site was to have formed part of a traffic roundabout, but the project was held up by war, and in 1945 The Lyceum reopened as a dance hall.



Lyche-Gate. Examples from Surrey churches. Left, Shere; right, Chiddingfold, restored Frith

East. In the time of the Roman emperor Claudius (A.D. 43) it was united with Pamphylia.

**Lycidas.** Elegiac poem by John Milton, published in 1638. Written in Nov., 1637, in memory of his friend Edward King, drowned in the Irish Sea, it is one of the most beautiful of Milton's works, yet it was censured by Dr. Johnson for want of sincere feeling. It abounds in quoted phrases like "fresh woods and pastures new"; "fame

Euboea, he flourished at Alexandria during the reign of Ptolemy Philadelphus, who gave him a post in the library. He wrote an essay on Comedy, several tragedies, and a poem on Cassandra, containing 1,500 lines in iambic metre, which is remarkable for the obscurity of its language, but of little value as a poetical effort.

**Lycopodiaceae.** A family of Pteridophytes, also known as club-moss (*g.v.*).

**Lycurgus** (c. 396-323 B.C.). Athenian statesman and orator. With Demosthenes and Hypereides he belonged to the national party at Athens which opposed all encroachments on the part of Macedonia. For 12 years he administered Athenian public finance with conspicuous success. Besides reorganizing the navy, repairing the dockyards, and completing the arsenal, he did much to improve and beautify the buildings of the city. As an orator he was lofty in tone, but his speeches lacked polish; 15 in number, only that against Leocrates has survived. See Philip, King of Macedon.

**Lycurgus** (fl. c. 800 B.C.). Reputed founder of the constitution of Sparta. No authentic facts are known about him, but the tradition was that, after acting as regent for his young nephew King Charilaus, he left Sparta and travelled extensively. On his return he was called



Lycurgus, reputed founder of the Spartan constitution

upon by the citizens to rescue the state from the confusion into which it had fallen. This he did with signal success, left the country never to return, and was worshipped as a god. Among the reforms attributed to him were the equitable division of the land among the citizens; the prohibition of gold and silver, and the substitution of iron as currency; establishment of the strict system of military training, common meals, and general education which gave Sparta military predominance in Greece and made her proverbial for courage and endurance.

**Lydd.** A mun. bor. of Kent, England. It is 3½ m. S. of New Romney, and 71 S.E. of London, and has a rly. junction. It is a member of the Cinque Port of New Romney. The chief building is the church of All Saints, a beautiful E. E. and Perpendicular

**Lyche-Gate** (A.S. *lic*, body). Roofed gate at the entrance to a churchyard. At a funeral the coffin here awaits the officiating clergyman. A number of churchyards in England retain their old lyche-gates.

**Lychnis.** Genus of plants of the family Caryophyllaceae. Five species are known in Great Britain, the commonest of which are the campion (*g.v.*) and ragged robin.

**Lychnoscope.** Small window (sometimes termed a low side window) near the west end of the chancel of a church, inserted lower than the other windows to permit communication between a person outside and the priest within. Originally this was unglazed and fitted with a shutter.

**Lycia.** Ancient country of Asia Minor. On the S. coast, it was bounded N. by Phrygia, W. by Caria, and E. by Pamphylia. Xanthus was the capital. According to tradition the inhabitants came originally from Crete. The Homeric hero Sarpedon is a Lycian. The people successfully resisted the Lydian empire of Croesus, but were conquered by Harpagus, the general of Cyrus. Persian sovereignty, however, was nominal, and with the rise of Athens the Lycians became members of the Athenian League. When Alexander became master of the world, Lycia was incorporated in Syria, but retained much of its independence, even after the Romans conquered the

is the spur"; "the hungry sheep look up and are not fed."

**Lyck** (Pol. Elk). Town of the former East Prussia, since 1945 in the Polish prov. of Masuria. It lies 115 m. S.E. of Kaliningrad. Lyck was the chief town of the Masurian Lakes district, situated on the Lyck lake and river. To its importance during the rule of the Teutonic Order, castle ruins testify. A rly. junction and a garrison town, it had some industry and an agricultural trade. The town was assaulted, and occupied by the Russians, also largely ruined by bombardment, in Aug., and again in Oct., 1914, but during the Masurian battle of Feb., 1915, they withdrew defeated. In Feb., 1945, after heavy fighting, it fell again to the Russians. Pop. 15,861.

**Lycomedes.** In Greek mythology, king of the island of Scyros in the Aegean. To him Achilles was entrusted by his mother Thetis, who desired to keep him from taking part in the expedition against Troy, in which she knew he was fated to be killed.

**Lycoperdon.** Scientific name for a genus of gasteromycetous fungi. See Puff-ball.

**Lycophron** (3rd century B.C.). Alexandrian poet and grammarian. A native of Chalcis in



Lyck arms

edifice, the longest church in Kent, known as the cathedral of Romney Marsh. Near the town is Dungeness. There is a permanent artillery camp, with experimental ranges, and the name of lyddite (*q.v.*) is taken from here. Lydd was originally on the coast and was a fishing village, but the sea has receded considerably. It became one of the Cinque Ports, and was made a borough by a bailliff. Pop. 2,778.



Lydd borough seal

the coast and was a fishing village, but the sea has receded considerably. It became one of the Cinque Ports, and was made a borough by a bailliff. Pop. 2,778.

**Lydda** (Heb. *Lod*, mod. *Ludd*). Town of Palestine. It stands on the plain of Sharon, 11 m. S.E. of Jaffa, and is said to have been founded by Shamed the Benjamite. According to legend, S. George was born and buried there, and his tomb is still shown. During the First Great War Lydda was captured from the Turks on Nov. 15, 1917. It is the principal airport of Palestine, and the rly. station is the junction for Jerusalem and Jaffa. Pop. (1944), 17,616, incl. 17,607 Arabs and 9 Jews. The surrounding country grows wheat and citrus fruit.

**Lyddite**. Name for the highly explosive trinitrophenol or picric acid, employed as a shell filling in the British service. The name is derived from the fact that the original experiments were conducted on the artillery range at Lydd, Kent. The explosive is melted and poured into the shell, where it solidifies to a compact crystalline mass. T.N.T. and amatol are preferred to lyddite as an explosive because of the acidic properties of the latter. Picric acid is known as an explosive under other names, *e.g.* melinite and picrinite.

**Lydekker**, RICHARD (1849-1915). British scientist. He was educated at Trinity College, Cambridge. During 1874-82 he was on the staff of the Geological Survey of India, but thereafter devoted himself mainly to writing on natural history. His works include *Phases of Animal Life*, 1892, and *The Horse and His Relations*, 1912. He compiled, in ten volumes, *Catalogues of Fossil Mammals, Reptiles, and Birds in the British Museum*. Made F.R.S., he died April 16, 1915.

**Lydenburg** (Afrikaans, town of suffering). Town of the Transvaal, S. Africa. It is on the rly., 170 m. E. of Pretoria, and stands

among the mountains, 4,600 ft. above the sea. It was established by the Boers in 1839, and was for 11 years the capital of a little republic. In 1858 this was amalgamated with the republic of Utrecht, and shortly afterwards was included in the Transvaal. It is a centre of gold mining, the mines having been worked by the Portuguese. In 1873 they were rediscovered, and proved the most profitable field in Transvaal outside the Rand. Pop. 3,845.

**Lydford** OR LIDFORD. Village and parish of Devon, England. It stands on the Lyd, 7 m. N.E. of Tavistock, with a rly. station. The chief building is the church of S. Petrock. Lydford was at one time an important place, owing doubtless to its proximity to the tin workings. It was a borough in Anglo-Saxon times. After the Norman Conquest a castle was built here, and there was a market and a guild. Lydford became one of the chief of the stannary towns, the castle containing the stannary prison. Therein, too, were held the Dartmoor forest courts, at which summary justice is said to have been the rule. It was restored in the 18th century and used for public purposes; but for the second time it fell into ruins. Lydford gorge is a beautiful ravine near. Pop. of parish, 2,218. See Lidford Law; Stannaries.

**Lydgate**, JOHN (c. 1370-1451). English poet. Born at Lydgate, Suffolk, he joined the Benedictine order at Bury St. Edmunds, being ordained deacon in 1393 and priest in 1397. He studied in Oxford and Paris. Court poet under Henry IV, V, and VI, he made the acquaintance of Chaucer about 1390, was prior of Hatfield Broad Oak, Essex, 1423-34, was pensioned in 1440, and, dying a poor man, was buried at Bury St. Edmunds. He wrote narrative poems, songs, fables, allegories, pageants, and is said to have written the prose work, *The Damage and Destruction of Realmes*, 1400. He also translated much Italian and French work, including some of Boccaccio.



John Lydgate, English poet

*The Temple of Glass*, ed. for the Early English Text Society, 1891, is an allegory in imitation of Chaucer's *House of Fame*. Lydgate enjoyed a great

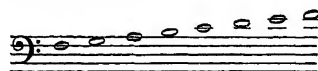
reputation after his death, but his work is chiefly interesting to students of language and metre. A selection of his poems was edited by Halliwell in 1840.

**Lydia**. Ancient country of Asia Minor. It was bounded N. by Mysia, E. by Phrygia, S. by Caria, S. and W. by the Aegean. In Homeric times it was known as Maeonia, but this name disappeared when about 700 B.C. Gyges (*q.v.*) killed the king Candaules and seized his throne.

The dynasty of Gyges lasted 150 years, during which period Lydia became a great and prosperous state, reaching the zenith of its power under Croesus, to whose brilliant court at Sardis came distinguished men from all parts of Greece. Under Croesus the Lydian empire extended from the Aegean Sea to the river Halys, and the Greek cities of Asia Minor were tributary. But in 546 B.C. Croesus went to war with Persia and was defeated, the country passing under the dominion of Cyrus.

After the overthrow of the Persian empire by Alexander, Lydia became an independent kingdom again in 334 B.C., but it subsequently became subject first to the kings of Syria, and then to those of Pergamum. In 133 it became part of the Roman prov. of Asia. After the Persian conquest the national spirit of Lydia was lost, and the name of the Lydians became synonymous for luxurious effeminacy.

**Lydian Mode**. In music, an old Church mode beginning on F and using only the natural notes, *i.e.* the white keys of the pianoforte. The scale was:



with semitones between the 4th and 5th and 7th and 8th degrees. Its dominant was C. The Lydian mode was reputed by the Greeks to be soft and rather effeminate in its influence, and its use was discouraged in the training of the young. See Mode.

**Lydian Stone**, BASANITE, OR TOUCHSTONE. A velvet-black siliceous stone or flinty jasper. It is a cryptocrystalline variety of quartz. If a piece of precious metal be rubbed on the hard, black surface of lydian stone, the purity of the metal can be estimated by the colour of its streak.

**Lydoch** OR LIDON. Loch or lake of Scotland. It is in the district called the moor of Rannoeh,



on the borders of Perthshire and Argyllshire. It is 5 m. long and is noted for its trout. The river Gauer carries its waters to Loch Rannoch.

**Lye** (A.S. *lēah*, cognate with Lat. *lavare*, to wash). Name given to a solution of alkaline salt, frequently sodium bisulphite, used for cleansing purposes. Originally the term was applied to the liquid obtained on lixiviating wood-ashes, which was also known as soap-lye because it was used in the manufacture of soap. Lye is used in petroleum refining, tanning, in the textile industry, in the removal of grease, and in the composition of acid-hypo fixing baths in photography.

**Lyell, MOUNT.** A peak of Tasmania, Australia, in Montagu co. It is in the N.W. of the island, and since its discovery in 1886 has become an important source of copper ore. Granite rock intruded into sedimentary strata and caused the accumulation of ore here, as it did in the neighbouring silver lead mines of Mt. Zeehan and tin mines of Mt. Bischoff. Mt. Lyell rises 2,750 ft.

**Lyell, SIR CHARLES (1797-1875).** A British geologist. He was born Nov. 14, 1797, at Kinnordy, Angus, the eldest son of Charles Lyell, botanist, and was educated at Midhurst and Exeter College, Oxford, afterwards entering Lincoln's Inn and being called to the bar. He devoted himself to geology, specialising in marine remains of the Tertiary period. He travelled widely in Europe, and the results of these tours appeared in *Transactions of the Geological Society*.

His chief work, *The Principles of Geology*, 3 vols., 1830-33, won for him the title of the father of modern geology. Its chief value was its demonstration that the forces which produced geological conditions of the past were still going on. Lyell was a firm supporter of Darwin's theories, as he showed in *Geological Evidences of the Antiquity of Man*, 1863. He occupied the chair in his subject at King's College, London, 1831-33, was twice president of the Geological Society,

and president of the British Association. Knighted in 1848 and created a baronet in 1864, he died Feb. 22, 1875, and was buried in Westminster Abbey.



Sir Charles Lyell,  
British geologist.

Under his will the Lyell medal and fund were founded. *Consult* Life, Letters, and Journals, 1881.

**Lyly** OR **LILLY, JOHN** (c. 1554-1606). English story-writer and dramatist. A native of Kent, he was educated at Magdalen College, Oxford, and was also a graduate of Cambridge. Settling in London 1577, he became a familiar figure at court, supervising the court entertainments, 1578-98. He took part in the Martin Marprelate (*q.v.*) controversy in a pamphlet, *Pappe with a Hatchet*, 1589, notable for its badinage and references to the stage attacks on Martin, and was M.P. for Hindon, 1589; Aylesbury, 1593 and 1601; and Appleby, 1597. Dying in London, he was buried in the church of S. Bartholomew the Less, Nov. 30, 1606.

First of the English writers of prose fiction, Lyly is chiefly remem-

bered as the author of Euphuës, which gave the word euphuism to the English language. In two parts—*Euphuës: The Anatomy of Wit*, 1579; and *Euphuës and His England*, 1580—this work marks the beginning of the English novel of manners. Strong in feminine interest, it is composed in a style marked by erudite allusion, forced simile, and excessive antithesis, and vividly reflects the fashions of the time. Original in form, it is strung together by a slender love-story telling the adventures of a young Italian gentleman of wealth and position. Its dialogue is satirised in the speeches of Ben Jonson's *Puntarvalo*, Shakespeare's *Don Armado*, and Scott's *Sir Piercy Shafton*. It abounds in advice on friendship, love, education, and religion. Inspired by Spanish models, it had great influence on Lyly's contemporaries and ran into ten editions in 56 years.

**Bibliography.** *Dramatic Works* ed. F. W. Fairholt, 2 vols., 1858; *Complete Works, with Life and Notes*, ed. R. W. Bond, 3 vols. 1902; J. L. and Euphuism, C. G. Child, 1894; J. L. and the Italian Renaissance, V. Jeffery, 1929.

**Lyme Regis.** Mun. borough, seaport, and watering-place of Dorset, England. It stands on Lyme Bay, 23 m. W. of Dorchester,



Lyme Regis, Dorset. Promenade and foreshore of this picturesque watering-place

and is connected by a branch rly. line with Axminster. The church of S. Michael and All Angels is a fine Perpendicular building with a Norman tower. There is a guild-hall, and a curved stone pier, forming the harbour, and called the Cobb, is an interesting relic and a popular promenade. There are delightful old houses and inns. Apart from the tourist business, the chief industries are shipping and stone quarrying. The name Lyme Regis was given to the place about 1300 when the manor became a royal manor. Up to the 11th cent. it was known as Lyme Abbas, and then as Nether Supra Lime. It was already known as a port and had received the privilege of a borough. It had a merchant guild, and from 1295 to 1867 was separately represented in parliament. It was a flourishing port up to the Middle Ages and in Tudor times, but began to decline when



the wool and textile industries went N. as a result of the Industrial Revolution. In 1685 the duke of Monmouth landed here. Lyme received several charters, but since 1834 has been governed by a mayor and corporation on modern lines. But the beauty of the town has altered little since Jane Austen described it in *Persuasion* (1816). The Cobb was the scene of Louisa Musgrove's accident in that novel. Jane Austen had stayed at Lyme with her parents in 1804. Pop. 2,620.

**Lymington.** Mun. bor., seaport and market town of Hants, England. The bor., which extends



Lymington borough seal

across some 25 sq. m., includes Pennington, Everton, Milford-on-Sea, Hordle, Ashley, Bashley, Wootton, and Barton-on-Sea. The town of Lymington is a yachting centre, at the entrance to the Solent, 18 m. by rly. S. of Southampton. New Milton station is on



Lymington. The High Street of this Hampshire market town and yachting centre

the main line to London. Lymington is noted for the church of S. Thomas à Becket, which has an extensive gallery. It was a port by the 12th century and a corporate town by the 13th. For 300 years before 1885 it was separately represented in parliament, but now forms part of the New Forest div. Market day, Sat. Pop. of bor., est. 20,000.

**Lymm.** An urban district of Cheshire, England. It is 5 m. E. of Warrington and 16 m. S.W. of Manchester. There are two rly. stations in the district, Lymm and Heatley. The church of S. Mary the Virgin is modern. In the centre of "the village" is an ancient cross, with stocks in front. The Manchester Ship Canal forms

the N. boundary of the district, while the Bridgwater Canal runs through the centre. The general character is residential, but salt is produced in Heatley. Pop. 6,000.

**Lymph** (Lat. *lympa*, water). Fluid which exudes through the thin walls of the minute blood-vessels and comes into intimate contact with the tissues, to which it conveys nutriment. The lymph also gathers up from the tissues the waste products of their activity and passes into small vessels, the lymph capillaries, which open into the larger lymphatic vessels, joining a main trunk, the thoracic duct, which enters the blood-stream at the junction of the jugular and subclavian veins on the left side. There is a smaller duct at the right side. After a meal, the lymph in the thoracic duct is found to be milky in appearance, owing to the presence of fat, and is called chyle.

Lymphatic glands are bodies ranging in size from that of a hemp seed to that of a bean, through which the lymph vessels pass. Their function is to form some of the white corpuscles of the blood. They also act in a sense as filters by which bacteria and their toxins may be separated out. Hence lymphatic glands become enlarged in certain diseases of the blood, and a septic injury leads to their enlargement and perhaps suppuration, a protective mechanism.

**Lympne.** A village of Kent, England. It is 2½ m. W. of Hythe, and has an airfield notable since 1915, when the R.F.C. established a base for ferrying aircraft to France. After the First Great War, Lympne was taken over as a civil airport, with customs and other facilities. A fighter station for most of the Second Great War, it reverted 1946 to the Ministry of Civil Aviation. Pron. Lim.

**Lynceus.** In Greek mythology, one of the fifty

sons of Aegyptus. He was spared by his wife Hypermnestra, one of the fifty Danaides, in defiance of her father's instructions that each of his daughters should kill her husband on the wedding night. See Danaides.

**Lynch, ARTHUR** (1861-1934). Irish writer. Born at Ballarat, Australia, he adopted a military career, and became in 1899 colonel of the Irish brigade which fought against the British in the Boer War. Elected Nationalist M.P. for Galway, 1901, he was arrested on coming to London to take his seat, and sentenced to death for high treason, but was given penal servitude and released in 1904. During the First Great War he was colonel in the British army. Died in London, March 25, 1934. His works include *O'Rourke the Great*, 1922; *My Life Story*, 1924; *The Case against Einstein*, 1933.

**Lynch, PATRICIO** (1825-86). Chilean sailor. Of Irish descent, he was born at Valparaiso, studied at the naval school at Santiago, and served in the war against Peru, 1838. Transferring to the British navy, he saw action in the China War, 1840-42, and afterwards returned to join the Chilean navy. Governor of Valparaiso in 1865, he commanded an expedition against Peru, 1879-80, and won fame at the battle of Chorrillos. Promoted admiral of the Chilean navy and commander-in-chief of the army, he died on returning from a mission to Spain.

**Lynchburg.** City of Virginia, U.S.A., in Campbell co. It is on the James river, 145 m. W.S.W. of Richmond, and is served by the Chesapeake and Ohio and other rlys. The city was named after the quaker, John Lynch, who established a ferry here in 1757; it was incorporated in 1852, having become the leading American tobacco market. Nearly 8,000,000 lb. of tobacco are marketed here annually. Lynch-



Lympne, Kent. Parish church and, right, castle ruins

Lynchburg shoe factories are fourth in national importance. The leading educational institution is the Randolph-Macon college for women. Pop. 44,541.

**Lynching.** Infliction of the death penalty without a proper trial. Though far from unknown elsewhere, the practice of lynching is historically most closely associated with the U.S.A. The term is found in American publications early in the 19th century, but the theories of its derivation from a certain Judge Lynch in Virginia are entirely conjectural. It was originally applied to any kind of punishment inflicted by a self-constituted court without legal authority. During the settlement of W. America it was a common means of punishing horse-stealers and other offenders against the community, and often took the form of flogging or tarring and

man under the signature Y.Y. An essayist of unusual charm and distinction, his publications include



Robert Lynd,  
British essayist

Portraits and Impressions, 1908; The Art of Letters, 1921; The Peal of Bells, 1924; Dr. Johnson and Company, 1928; Life's Little Oddities, 1941; Things One Hears, 1945. He died Oct. 6, 1949. His wife, Sylvia Lynd, *née* Dryhurst (b. 1888), whom he married in 1909, edited the Children's Omnibus, 1932; and her collected poems appeared in 1944.

**Lyndhurst.** Parish and village of Hampshire, England. It stands in the New Forest, 9 m. S.W. of Southampton, with a railway station (Lyndhurst Road). It is a centre for visitors to the forest. The church of S. Michael and All Angels, which contains a fresco of The Ten Virgins by Lord Leighton, is fairly modern. Here is the King's House, containing a hall still used for the meeting of the forest courts, or

courts of Swainmote. Pop. 3,000.

**Lyndhurst, JOHN SINGLETON COPLEY, BARON (1772-1863).** British lawyer. Born at Boston, U.S.A., May 21 1772, he was the son of the painter J. S. Copley (*q.v.*). Educated at Trinity College, Cambridge, he was a successful barrister when elected Tory M.P. for Yarmouth in 1818. Later he sat for Cambridge university and Ashburnham. Solicitor-general in 1819 and attorney-general in 1824, he was appointed lord chancellor and raised to the peerage in 1827. In 1830 he became chief baron of the exchequer, returning to the wool-sack in Peel's ministries of 1834 and 1841-46. Lyndhurst usually

opposed reform, but stood and fell with his chief over the repealing of the Corn Laws. He was a vigorous speaker and a lucid expositor of legal matters. When he died on Oct. 12, 1863, the title lapsed.

**Lyndsay** OR **LINDSAY, SIR DAVID** (c. 1490-1557). Scottish poet. Born near Cupar, he be-



Sir D. Lyndsay,  
Scottish poet  
From a print, 1654

longed to the famous Fife family, the head of which is the earl of Crawford. Educated at St. Andrews, he entered the royal household and was sent abroad on errands of state. He was a member of parliament and joined the reforming party when the Reformation began. His poems, which powerfully if coarsely exposed the corruptions of the Church, are said to have done much to hasten the success of its teaching. They include the Dreame, The Historie of Squyer Meldrum, The Monarchie, and Ane Satyre of the Thrie Estaites, the last named being a satirical morality frequently acted in the open air. There is an edition of his works by D. Laing, 1879.

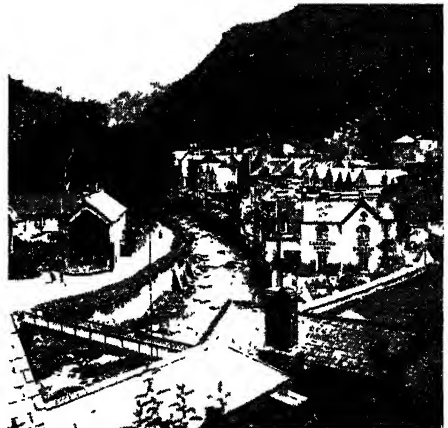
**Lynmouth.** Village and seaside resort of Devon, England. It stands at the junction of the E. Lyn and the W. Lyn, 18 m. N.E. of Barnstaple, at the base of a cliff, at the top of which stands Lynton. A cliff rly. connects Lynton and Lynmouth, but since the closing of the line to Barnstaple they are the remotest places in



Lyndhurst. View of this Hampshire village, a centre for visitors to the New Forest

feathering. Recently the term has been confined to the death penalty, especially when inflicted by white mobs on negroes in the southern states. Many of these lynchings have been accompanied by the most brutal tortures. Attempts made from time to time to enact a federal anti-lynching law have been defeated by the representatives in congress of the southern states. Yet the number of negro lynchings in the U.S.A. shows a steady decrease from 106 in 1901 to one in 1945.

**Lynd, ROBERT (1879-1949).** British essayist. Born in Belfast, April 20, 1879, he was educated at Queen's College there. Joining the Daily News in 1912 on its amalgamation with the Morning Leader, he became its literary editor in 1913, retaining the position when the paper was merged with the Daily Chronicle to become the News Chronicle. For years he also contributed shrewd and quietly witty articles to The New States-



Lynmouth, Devon. The village and River Lyn, looking inland

England from a rly. There is an old stone pier, and steamer connexion with Ilfracombe.

**Lynn.** City of Massachusetts, U.S.A., in Essex co. It is on Massachusetts Bay, 11 m. N.E. of Boston, and is served by the Boston and Maine and other rlys. It has a secure but rather shallow harbour, and its many industries include the manufacture of boots and shoes, for which it is an important centre. There are foundries, electrical machinery shops, and patent medicine, leather, and box factories. The city has a fine city hall. In Lynn is the former residence of Mary Baker Eddy, founder of Christian Science. Lynn dates from 1629, then known as Saugus, and received its present name in 1673, after King's Lynn, Norfolk, England. It became a city in 1880. Pop. 98,123.

**Lynn, RALPH** (b. 1882). British comedy actor. Born in Manchester, March 18, 1882, he first appeared on the stage at Wigan in 1900, and made his London debut in *By Jingo*, 1914. Achieving fame in *Tons of Money*, 1922, he became one of the most popular entertainers of his time in a series of farces at the Aldwych Theatre (*q.v.*), where his monocle, toothy smile, and vague but genial air endeared him to the public. In film versions of these farces he had an immense following. A long run rewarded his reappearance on the stage in *Is Your Honeymoon Really Necessary?* 1944. *Outrageous Fortune* was produced 1947.

**Lynn, VERA** (b. 1917). British entertainer. The daughter of a plumber, Vera Welch was born at East Ham, March 20, 1917, and sang at charity concerts as a child. She made her first broadcast as a singer with Joe Loss's dance band, and later joined that of Ambrose. During the Second Great War, the "forces' sweetheart" entertained troops in India and Burma, flying some 20,000 m. Broadcasts in person and of her gramophone records of sentimental songs brought her a huge fan-mail.

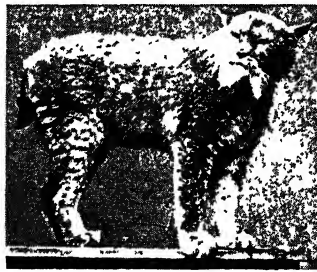
**Lynn Canal.** Inlet of Alaska. It extends N. from Admiralty Island for about 100 m., and bifurcates at its head into the Chilkat and Chilkot inlets. On the latter stands Skagway, and on the land tongue between the two is the small Chilkat village. The canal forms an important approach to the Klondike mining region.

**Lynskey Tribunal.** See N.V.

**Lynton.** Urban dist. and watering place of Devon, England, situated in the Lorna Doone country.

It stands on a cliff, 400 ft. above Lynmouth, a cliff rly. going from one to the other. It is 17 m. N.E. of Barnstaple. The church of S. Mary is an old building restored. From here coaches and cars go to places of beauty in the neighbourhood, of which Watersmeet and the Valley of the Rocks may be mentioned. Lynton and Lynmouth claim to be the most beautiful places in England. Pop. 2,100.

**Lynx** (Lat. *lynx*). Genus of the cat family. It is distinguished by its heavy build, short tail, tufted ears,



Lynx. Specimen of European species

and bearded cheeks. It occurs in many parts of Europe, in Tibet, and in North America. Two species are found in Europe. The Northern lynx is found in Russia and Scandinavia, and rarely in Central Europe. It inhabited England in the Pleistocene period, and its bones have been found in the N. counties. It is a forest animal, and an expert climber of trees. A fine specimen measures about a yard without the tail, which is about eight inches long. The thick and rather long fur varies in colour from grey to fawn, and in summer is spotted with black. In disposition savage, the lynx preys on birds and mammals, sheep and goats often being destroyed.

The Mediterranean lynx, found from Spain to Turkey, is a lighter and more handsome animal, the reddish coat being finely spotted and streaked. The Isabelline lynx of Tibet avoids the forests and lives among the rocks on open ground. It is paler in colour than the European species. The Canadian lynx, which is slightly smaller and ranges in colour from dark grey to almost white, is found in the forests, and preys mainly on hares and partridges. The bay lynx, reddish in colour, with large, black spots, occurs in the E and S. states of the U.S.A., varying greatly in colour and markings in different districts.

**Lynx.** One of the constellations. Situated between the Great Bear and Cancer, it is very faint, and

contains several well-known double stars. See Constellation.

**Lyon.** Old Scottish form of lion, used now in heraldry. The heraldic office for Scotland is called the Lyon Court, and its head is the Lyon king of arms. The office dates back to 1371, or earlier, and was named from the lion on the royal shield. The lord Lyon is assisted by three heralds, Rothesay, Ross, and Albany, and by three pursuivants, March, Unicorn, and Carrick. All arms or alterations thereon in Scotland must be entered in the Lyon court, where pedigrees are also recorded. The office is the Scottish equivalent of the Heralds' College in England, but is a government office, all its fees being handed over to the Treasury. The Lyon king of arms is registrar of the order of the Thistle. See Heraldry; Knighthood; Thistle.

**Lyonnesse.** Name of a legendary country. It was believed to have lain off the coast of Cornwall, and to have disappeared under the sea; according to another legend it included Cornwall. The name appears in the old county of Léon in Brittany. Cornish and Breton folklore is full of references to this lost land, which also serves as the scene of events described in the Arthurian legends. In it was Camelot, King Arthur's capital.

**Lyonnais.** Former county of France, also a province until the Revolution. The county extended along the right bank of the Saône and Rhône, from Villefranche to Condrieu below Vienne, with a small district on the left banks of both rivers around Lyons, the capital. It corresponds roughly with the S. half of the dept. of Rhône, with a small portion of Loire. The territory of the Gallic Segusii, it belonged in turn to the Burgundians, the Franks, the kingdom of Arles or Provence, from which it passed to the Empire, 1033, and became a possession of the archbishops of Lyons. Philip IV, the Fair, annexed it to France in 1312. The province of Lyonnais comprised the depts. of Rhône, Loire, Haute-Loire, and Puy-de-Dôme. See Lyons.

**Lyons** (Fr. Lyon). A city of France, fourth in respect of pop. (counting Algiers), and cap. of Rhône dept. It



Lyons arms

lies at the confluence of the Rhône and Saône, which divide the city into three main portions: the old town on the strip between

the rivers, the quarters of Les Brotteaux and La Guillotière on the left bank of the Rhône, and those of Vaise, Fourvière, and St. Irénée, on the hills lying on the right bank of the Saône; La Croix-Rousse lies between the river to the N. The town is a rly. centre of great importance, 317 m. from Paris *via* Dijon, has seven passenger stations and by its position on the two navigable rivers, lined with busy quays, has a large volume of waterway traffic.

Lyons is the seat of an archbishop and of an ecclesiastical as well as of a state university, both

between the First and Second Great Wars. Lyons is conveniently close to the coalfields of St. Étienne, and electrical power from the French Alps is also available.

In the narrow, old streets in the heart of the city, many medieval buildings survive. Near the Manécanterie, the school of the choir singers (10th cent.), the cathedral of S. Jean (12th to 15th cents.), with fine glass paintings, an astronomical clock, and a valuable treasure, stands out. S. Martin d'Ainay, a 6th cent. basilica, with additions of the 10th to 13th, and the Hôtel Dieu, a hospital founded

tions are famous. Its old established wealth and patrician society have produced an art, musical, theatre, and sports life second only to that of Paris. Much of its 20th cent. development was due to Édouard Herriot (*q.v.*), who, becoming mayor in 1905, gave his city an exemplary administration.

The history of Lyons has been chequered, often tragic. As Lugdunum, it was the capital of the Segusavian Celts, became a Roman colony in 43 B.C., later capital of Gallia Lugdunensis, was the birthplace of the emperors Claudius, Marcus Aurelius, and Caracalla; was burnt down by Septimius Severus in 197 A.D., after being Christianised by Saints Pothinus and Irenaeus; was made a bishopric, then, from the 5th cent., an archbishopric; fell first to the Burgundians, then to the Franks, forming the Lyonnais county which was, 1083, embodied in the German empire. When it asked for French protection, 1274, Philippe le Beau granted it urban rights. The 13th

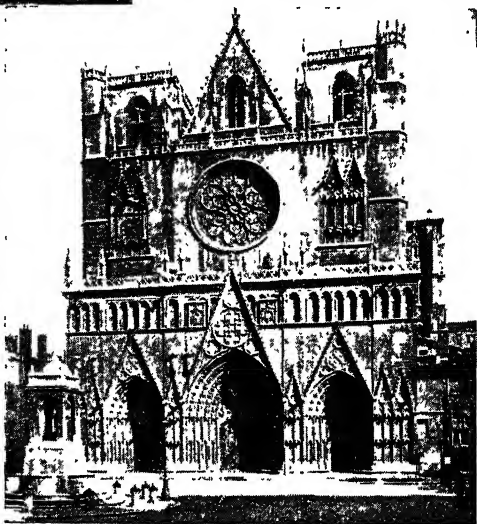


of four faculties, and each with 3,000–4,000 students. Lyons has also a technical university, the école centrale Lyonnaise, and special colleges, etc., for colonial, agricultural, architectural, art, veterinary, and other studies. Among its six public libraries, the local one holds 450,000 vols., more than 1,000 incunabulae, and 5,000 MSS., among them the famous Codex Lugdunensis, illuminated French, Latin, and Persian MSS., and 25,000 engravings; among its museums, that of the history of textiles is unique: it holds 400,000 samples and the most complete collection of lace in the world. Other collections deal with zoology, botany, geography, painting, glyptics, numismatics, antiquities, colonies, industries (esp. silk), etc.

Lyons is generally counted the second industrial centre of France, noted chiefly for its silk manufacture. Introduced from Italy in the early 15th cent., silk has remained the staple commodity of Lyons, the trade being revolutionised by the loom invented by J. M. Jacquard (1752–1834). Such allied trades as hat-making, lace, etc., and nearly all other French industries are represented in Lyons and its suburbs. Furthermore, the city is an important financial centre, headquarters of the Crédit Lyonnais and other banks. The Lyons commercial fair, held twice yearly, was founded in 1916 as a challenge to the supremacy of that of Leipzig, and made rapid progress

in the 6th cent. by King Childebert, S. Bonaventure (14th to 15th), and S. Nizier (15th cent.) represent the Middle Ages; a town hall of 1646–55, with a 130-ft. belfry, and the arts palace, formerly a convent, of 1667, represent the Renaissance. The dominating pile, however, is Notre Dame de Fourvière (1872–84), a Romanesque basilica, on the 1,000-ft. Fourvière hill, with four Byzantine towers. From there—one of France's most famous centres of pilgrimage—and from the nearby "tour métallique," a tower in steel framework, there is a beautiful view over Lyons and its surroundings.

A number of impressive squares—place Bellecour, between the two rivers, place des Terreaux, with public buildings—and open spaces like the parc de la Tête d'Or, together with the green hills, the rivers, and their 30 bridges, the zoological and botanical gardens, and the widespread buildings of the fair contribute to make Lyons an attractive city. Its culinary attrac-



Lyons, France. Façade of the cathedral of S. Jean. Top, left, view from left bank of Saône, showing colonnade of the law courts and church of Notre Dame de Fourvière, on the hill

and 14th papal concilia were held there, 1245 and 1274; after being enriched by the immigration of Italian silk weavers, it suffered heavily in the Huguenot wars.

During the French Revolution Lyons revolted against the regime of terror, was stormed in 1793, partly destroyed, and 6,000 of its citizens were executed. Labour conflicts, etc., led to other severe military reprisals in 1831, 1834, 1840, 1849, and 1871. During 1814 and 1815 it was occupied by

Austrian forces. In Nov., 1930, a landslide wrought havoc in the sector built on the Fourvière hill.

During the Second Great War, Lyons was taken by the Germans June 20, 1940, but under the Franco-German armistice was in unoccupied France, under the jurisdiction of the Vichy govt. On September 22 the municipal council was suspended for the duration of the war, being replaced by a govt. commissioner. Its factories and rly. communications were bombed by the Allied air forces in the spring and summer of 1944, and on Sept. 3, 1944, it was liberated by the U.S. 7th army, the Germans having withdrawn after destroying all the Rhône bridges, including the 12th cent. Guillelière bridge, and all but two over the Saône. The dome of the Hôtel Dieu had been destroyed by fire, but the city was otherwise little damaged. Pop. 460,748.

**Lyons, COUNCIL OF.** Name given to two ecclesiastical assemblies at Lyons. At the first, held under Innocent IV, June 28-July 17, 1245, the emperor Frederick II was deposed. At the second, held under Gregory X, May 7-June 17, 1274, the temporary union of the Greek and Latin Churches was effected. In church history the councils of Lyons rank as the 13th and 14th ecumenical or general councils.

**Lyons, RICHARD BICKERTON PEMELL LYONS, 1ST EARL (1817-87).** British diplomatist. Son of



1st Earl Lyons, British statesman

Edmund, Lord Lyons, he was born at Lymington, April 26, 1817, and was educated at Winchester and Christ Church, Oxford. In 1839 he entered the diplomatic service, passed some years at Dresden, Florence, and Rome, and in 1858 was appointed ambassador to

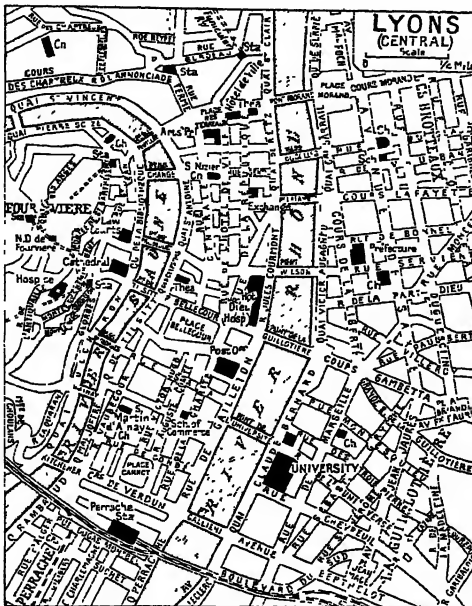
Washington. His attitude during the Civil War was firm, and he carried through with tact the negotiations regarding the Confederate envoys, Mason and Slidell. In 1865 he was transferred to Constantinople, and two years later to Paris. Accompanying the provisional government to Tours, he represented Great Britain while the Third Republic was being established. He resigned his post in Nov., 1887, and died Dec. 5. He had inherited a barony in 1858 and been made an earl in 1887, but both titles became extinct on his death.

**Lyons, EDMUND LYONS, 1ST BARON (1790-1858).** British sailor. Born at Burton, Hants, Nov. 29, 1790, he went to sea in 1803, and distinguished himself in engagements off the Dutch Spice Islands, 1810. The following year he seized



1st Baron Lyons, British sailor

Marrack, a feat carried out in excess of his orders, but ill-health forced his return to England in 1812, and two years later he retired. In 1828 he was sent to the Mediterranean, played a hand in the confused game of Greek politics, and in 1835 was appointed minister plenipotentiary at Athens.



Lyons, France. Pre-war plan of the great commercial city; most of the bridges were destroyed in 1944

Transferred to Berne, 1849, and in 1851 to Stockholm, he was recalled in 1853 and sent to the Mediterranean as second in command of the fleet dispatched on the outbreak of the Crimean War. In 1855 he succeeded Dundas in command of the fleet. Retiring in 1858, he died Nov. 24. For two years he had been a baron.

**Lyons, SIR HENRY (1864-1944).** British scientist. Born in London, Oct. 11, 1864, he was the son of a general who had governed Bermuda. Commissioned in the Royal Engineers, he was interested in geology, serving as director of the survey department of the Egyptian government from 1898 to 1909. Lyons's scientific work was important economically as well as geographically, and he became F.R.S., 1900. During the First Great War meteorology claimed his attention; he organized services for the British armies in France, and in 1918 was director of the Meteorological Office. After the war he assumed the directorate of the Science Museum, London, a post he held until 1933. He was knighted in 1926. He became first secretary of the international union of geodesy and geophysics, and later secretary of the international council of scientific unions. He was also president of the Royal Meteorological Society. Lyons died Aug. 10, 1944.

**Lyons, SIR JOSEPH (c. 1847-1917).** British business man. A Londoner, he was educated at a Jewish school. He studied art and had some success with water-colour drawings, but by chance his attention was turned to the subject of catering for the masses. With two friends, Isidore and Montagu Gluckstein, he began to cater for exhibitions, etc., and in 1894 the firm of J. Lyons & Co. opened its first tearoom. Others followed, both in London and in the provinces, and before Sir Joseph died his was the largest business of its kind in the U.K. Knighted in 1911, he was chiefly interested outside his business in the Territorial Force. He died June 22, 1917.

**Lyons, JOSEPH ALOYSIUS (1879-1939).** Australian statesman. Born at Stanley, Tasmania, Sept. 15, 1879, he became a school teacher, and was elected to the island house of representatives in 1909. He held government posts from 1914 and was premier of Tasmania, 1923-28. He became postmaster-general and minister for public works in the Commonwealth government, 1929-31. Then he founded the





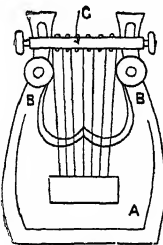
Joseph A. Lyons,  
Australian statesman

United Australia party, and after leading the opposition, became prime minister in 1932 and was made a privy councillor. He represented Australia at George V's silver jubilee celebrations, at the Imperial trade conference in 1935, and at the coronation of King George VI in 1937. That year he began his third successive term as premier of the Commonwealth, an office he held until his death on April 7, 1939.

**Lyons' Inn.** Old London inn of chancery. It stood between Wych St. and Holywell St., Strand, existed in the time of Henry VIII or earlier, and was attached to the Inner Temple from 1581 to 1863, when it was pulled down, and the Globe and Opéra Comique theatres were built upon its site. The last vestige of the inn, which once had Sir Edward Coke as reader, disappeared with the two playhouses in 1902 during the construction of Aldwych (q.v.). Its history is associated with the murder of William Weare, a resident, by Thurtell and Hunt, in 1823, the theme of a mock Catnach ballad by Theodore Hook and a novel by Thomas Burke. See Holywell Street; Inns of Court.

**Lyra.** One of the constellations. Though a small group of stars, it contains the great and brilliant Vega, one of the most conspicuous stars of summer skies. Vega forms one of the points of an equilateral triangle, at the other angles of which are epsilon and zeta Lyrae. Zeta, beta, gamma, and delta of the constellation form a little rhomboid. These stars are all visual doubles. Lyra is close to the borders of the Milky Way, near Cygnus. The constellation is also remarkable for the ring nebula, Messier 57.

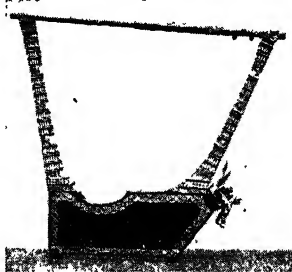
**Lyre.** Musical stringed instrument, used in ancient and medieval times. It consisted of a hollow box or resonator with two projecting arms support-



Lyre. Diagram explaining construction of Greek lyre. A. Resonator. BB. Horns or uprights. C. Cross-bar

ing a cross-bar from which about seven strings were stretched. The strings were plucked by the fingers or with a plectrum. The lyre was akin to the harp, but with fewer strings, and was a relation also of the lute, but without finger-board. The diagram will make these distinctions clear.

The shape of the lyre, which has differed in detail from time to time



Lyre. Restoration of lyre discovered at Ur (about 3,500 B.C.). It is decorated with mosaic and a bull's head in gold

Courtesy of Joint Expedition to Ur

without departing from its general principles, has been said to have been derived originally from the top of the skull and the horns of a bull or goat. See Greek Art.

**Lyre Bird.** Genus of birds (*Menura*) found in the forests of Australia. They gain their name from the extraordinary development of the tail in the males; the two outer feathers being curved in the form of the frame of a lyre, while the intermediate ones are slender and provided with few barbs, thus suggesting the strings. The several species vary in the colour of their plumage; all spend most of their time on the ground, in the denser parts of the bush, where they feed upon snails, insects, and worms. They seldom fly, but can run fast. See Birds, colour plate.

**Lyric** (Gr. *lyra*, a lyre). Name given to a poem, or form of poetry, so called since it was originally composed to be sung to, or accompanied on the lyre, as distinguished from forms more suited to declamation or recitation. The term, however, has long been applied to many types of verse which have few or none of the characteristics of song. Poetry sometimes spontaneous, sometimes meditative, often slow in movement and reflective in character, like many English sonnets, is in the absence of more exact terminology, usually described as lyrical. The ode, hymn, song, and some types of elegy and ballad are examples of true lyric, which commonly treats

of personal, patriotic, devotional, or amatory themes, in which the emotional, as distinct from the narrative element, is conspicuous.

In primitive periods, when dance, music, and song were closely associated, poetry was altogether choral, and in the refrain or chorus, still surviving in some modern songs, we have the germ of lyrical, as indeed of all poetry, which, like speech itself, is communal in origin. As individuality and civilization developed, the chorus fell silent, and poetry became more of a personal utterance. Broadly speaking, then, lyrical poetry is intimate, personal, subjective, descriptive of the joys, sorrows, hopes, and aspirations of the individual, and by the lyrical cry is meant the cry of the heart, of the more poignant emotions. In the more formal and elaborate modes, however, like that of Alexander's Feast or Wordsworth's Ode on Intimations of Immortality, it frequently develops themes in a rhetorical or philosophical spirit, while in some poems, like the



Lyre Bird. Male specimen of the Australian bird

Robin Hood Ballads or Scott's Rosabelle (Lay of the Last Minstrel), the subject is treated in the objective narrative manner.

In lyrics we have the choice and sublimated essence of poetry, the pure elixir, which in other poetic forms, like epic or drama, is in some degree mixed with foreign matter, rich, it may be, in interest, but of a different order, in which prosaic elements are still present. In this rapturous singing region those poets rank highest who, like Shelley, seem at times almost to have made good their escape from the world of common life.



Lyrical poetry, it may be said, most nearly approaches music itself, interpreting emotions hardly to be conveyed in articulate speech. It offers us little beyond itself, its own inherent interest, "whose peculiarity lies in the isolation of the pleasure it gives from life and social conditions." On the other hand, poetry which illuminates and interprets human experience, like that of Wordsworth, in whom the singing note is less clearly heard, but in whom we have a "noble and profound application of ideas to life," even if less purely lyrical, cannot be regarded as less, and by some minds will always be regarded as more, precious. The truth is, poetry has outgrown the early categories, and it is the especial glory of English literature, as displayed in the astonishing variety of its themes, that it has captured for lyrical poetry new territory and enlarged the kingdom of the imagination. *See English Literature; Poetry.*

W. McNeile Dixon

**Lyric Theatre.** London playhouse in Shaftesbury Avenue, W.1. It was opened Dec. 17, 1888, with a production of the comic opera *Dorothy*, and became the home of well-known musical comedies, e.g. *La Cigale*, 1890; *The Chocolate Soldier*, 1910; *The Girl in the Taxi*, 1912; *Lilac Time*, 1922. Among notable dramas presented here were *Autumn Crocus*, 1931; *Dangerous Corner*, 1932; *Tovarich*, 1935; *Amphitryon '38*, 1938; *The Winslow Boy*, 1946. The theatre seats 1,475.

**Lyric Theatre, HAMMERSMITH.** Playhouse opened Nov. 17, 1890. Though a suburban theatre, it became nationally famous under the direction, 1918-32, of Sir Nigel Playfair (*q.v.*), whose revival of *The Beggars' Opera* in 1920 ran for 1,463 performances. Other successes were A. P. Herbert's *Riverside Nights*, 1926, and *Tantivy Towers*, 1931. The Company of Four, a non-profit-making organization associated with the Arts Council, assumed control in 1945, and gave plays by European dramatists, Sartre, Molnar, and Cocteau. The theatre seats 800.

**Lys.** A river of France and Belgium. It rises in the Pas-de-Calais, between Boulogne and Lille, and flows mainly N.E. Between Aire and Armentières it crosses a flat, low plain, naturally a marsh, and finally joins the Schelde at Ghent. The middle section of the valley is one of the most densely peopled areas in the world. There are steel works at Isebergues in the

French section, while the towns lower down are noted centres of the linen industry. The Ypres canal joins the Yser with the Lys at Comines. Its length is 120 m., most of which is navigable.

The river was prominent throughout the First Great War, from the first battle of Ypres in 1914 to Oct. 16, 1918, when in the final battles the British reached the left bank, forcing a passage at Beveren a few days later. During the Second Great War there was fighting on the Lys in 1940. A lightning German advance had by May 21 made it necessary for the British and Belgians to fall back from their positions along the Schelde; the Belgians held a sector from Terneuzen to Ghent and thence along the Lys to Halluin, while the British on their right covered Lille and Douai. On May 24 the Germans breached the Belgian line on a front of 13 m. in the Courtrai area. The British, their left threatened and their hopes of closing the gap between themselves and the main French armies rapidly vanishing, retired to positions on the Lys between Merville and Comines, May 27-28, just as the Belgians asked for an armistice. The Germans made no attempt to stand on the Lys during the rapid advance of the British 2nd army from the Seine to Antwerp, Aug. 30-Sept. 4, 1944.

**Lysander.** Army cooperation aeroplane designed by Westland Aircraft, Ltd., for the R.A.F. The first specialised machine of its class, the Lysander equipped several first-line squadrons in Flanders and France, 1940, and later was adapted for such duties as landing agents and providing supplies for the underground movement in Europe. It was widely used as a target tug and for air-sea rescue. Fitted with a single Bristol Mercury or Perseus radial engine, the Lysander carried a crew of two at a maximum speed of 212 m.p.h. It had a slow flight and short take-off and landing run. The wing span was 50 ft.

**Lysander** (d. 395 B.C.). Spartan general and statesman. He rose to fame during the latter period of the Peloponnesian War (*q.v.*). As commander of the Spartan fleet, off the coast of Asia Minor, he ingratiated himself by skilful diplomacy with Cyrus the Younger, and received from him subsidies for the Spartans, which proved a factor in their triumph. In 405 B.C. his fleet defeated that of the Athenians at the battle of Aegospotami, which virtually brought the Pelopon-

nesian War to an end. In the following year he took Athens, destroyed the famous Long Walls, and established the rule of the thirty tyrants to keep in subjection the anti-Spartan democracy. In 396 he accompanied the Spartan king, Agesilaus, on his campaigns against the Persians in Asia Minor, and was killed in 395 at the battle of Haliartus in the Boeotian War.

**Lysander.** Character in Shakespeare's comedy, *A Midsummer Night's Dream*. In love with Hermia, he is forbidden to marry her by her father, who has selected Demetrius as a husband. Lysander knows that "the course of true love never did run smooth," but proves constant despite adventures by night in a wood near Athens, and all ends happily.

**Lysenko Controversy.** *See Genetics in N.V.*

**Lysias** (c. 459-278 B.C.). Greek orator, born at Athens, of Syracusan descent. The thirty tyrants took his property, and slew his brother, Polemarchus, 404. When the thirty were overthrown he impeached one of them, Erasthenes, in a brilliant speech. There are 34 extant speeches of Lysias, who was the first to introduce into oratory the plain straightforward language of everyday life, and was regarded as the model of the simple style of oratory. *See Greek Literature.*

**Lysimachus** (c. 360-281 B.C.). Macedonian general and king of Thrace. On the death of his master, Alexander the Great, in 323, he was made governor of Thrace and the country to the N., and assumed the title of king in 306. In the fighting which broke out among the successors of Alexander he was able, as a result of the successful battle of Ipsus in 301, to add to his dominions, obtaining control of a slice of Asia Minor. By 287 he was ruler of all the old kingdom of Macedonia, in addition to his Asiatic territories. Having killed his son, Agathocles, he incurred the enmity of Seleucus, king of Syria, who gained a victory at Corus, in Asia Minor, in which Lysimachus was killed.

**Lysippus.** Greek sculptor of the 4th century B.C. He belonged to the school of Argos of Sicyon. No authentic example remains of his 1,500 statues, mostly bronze, but there are many reproductions. He made a series of statues of Alexander the Great, who refused to employ any other sculptor.

**Lysistrata.** Comedy by Aristophanes. It appeared about 411 B.C., shortly before Peisander

arrived in Athens from Samos to put in practice an oligarchic policy, and represents a women's conspiracy to bring about peace. The war between Athens and Sparta having been renewed, Lysistrata, "disbander of armies," persuades the Athenian matrons to desert their husbands and refuse to return home until peace is again established. Confronted with this strike of wives, the men are rendered powerless: the women occupy the citadel, and bring the citizens to surrender.

**Lyskamm** OR SILBERBAST. A mountain of the Monte Rosa Group on the Italo-Swiss border. The E. peak has an alt. of 14,860 ft., and is ascended via the Lysjoch (14,030 ft.). The ascent is dangerous. The W. summit, 14,688 ft. in alt., is ascended from the Quintino Sella Hut (alt. 11,815 ft.). See Alps.

**Lysol**. Widely used disinfectant containing 50 p.c. by volume of cresol dissolved in water by the addition of soap made from a fixed vegetable oil and caustic soda or potash. In some places outside the U.K. Lysol is a proprietary term.

**Lysons, DANIEL** (1762-1834). British topographer. Born April 28, 1762, and educated at Bath grammar school and S. Mary Hall, Oxford, he became curate of Mortlake, then of Putney, and later succeeded to the living of Rodmarton, Glos., dying at Hempstead Court, Jan. 3, 1834. He is best known as the author of a valuable work on *The Environs of London*, 1792-96, of which a second edition appeared in 1811.

**Lysons, SAMUEL** (1763-1819). British antiquary. Second son of the rector of Rodmarton, Glos., he was born May 17, 1763, educated at Bath grammar school, and called to the bar in 1798. In 1803 he became keeper of the records at the Tower of London. An artist, he exhibited at the Academy, contributed etchings to his brother Daniel's *Environs of London*, and worked for many years on his *Reliquiae Britannico-Romanae*, containing *Figures of Roman Antiquities Discovered in England*, 1801-17. He died June 29, 1819.

**Lystra**. City of Lycaonia in Asia Minor, the modern Khatyn Serai. It was several times visited by S. Paul, and it was here that the people wished to offer sacrifice to him and S. Barnabas, supposing them to be incarnations of Mercury and Jupiter (Acts 14).

**Lyte, HENRY FRANCIS** (1793-1847). British hymn writer. Born at Ednam, Roxburghshire, June 1,

1793, he was educated at Portora, Ireland, and Trinity College, Dublin. Ordained in 1815, he was incumbent of All Saints, Lower Brixham, 1823-44. Popular among the fisher folk, he wrote songs for sailors, and founded a large Sunday school. Despite Poems Chiefly Religious, 1833, and The Spirit of the Psalms, 1834, he is chiefly remembered for the hymn, Abide with Me. This was written in late summer, 1847: Lyte died Nov. 20 at Nice. Praise my soul, the King of Heaven is also his.

**Lytham St. Annes**. British holiday resort. On the N.W. coast of Lancashire, at the mouth of the Ribble, 13 m. W. of Preston, it is reached by road, rly., or steamer. In 1922 the urban districts of Lytham and St. Annes were incorporated by Charter as a borough, of which the N. touches Blackpool. There are promenades and a pier, good bathing and golf, remedial baths, gardens, and facilities for riding and yachting. Pop. 30,000.

**Lythraceae**. Family of herbs and shrubs. They are natives chiefly of the tropics, but have a well-known European representative in the purple loosestrife (*Lythrum salicaria*). The leaves are opposite or in whorls. The family includes such plants as henna (*Lawsonia inermis*) and pomegranate (*Punica granatum*).

**Lyttelton**. Chief port of the district of Canterbury, New Zealand. It has a fine natural harbour, 10 m. by 2 m., encircled by steep hills tunnelled to give access to Christchurch, 7 m. to N.W. It has a large gravelling dock and exports wool and grain. Pop. 3,407.

**Lyttelton, GEORGE LYTTTELTON**, 1ST BARON (1709-73). British politician. He was born Jan. 17, 1709, at Hagley, his mother being one of the Temples of Stowe. Educated at Eton and Christ Church, Oxford, he entered the house of commons in 1735 for Okehampton,

being already one of the intimates of Frederick, prince of Wales. In 1755 he became chancellor of the

exchequer, but in 1756 he retired and was made a peer. An active politician until his death, Aug. 22, 1773, Lyttelton was regarded as an orator, and was a voluminous writer, but his influential position was due really to family connexions. His most ambitious works are *Life of Henry II*; and *Observations on the Conversion and Apostleship of S. Paul*, 1747. His successor was his son Thomas.

**Lyttelton, THOMAS LYTTTELTON**, 2ND BARON (1744-79). British politician. Born at Hagley, Jan. 30, 1744, he was the eldest son of the 1st lord. Educated at Eton and Christ Church, Oxford, he entered parliament for Bewdley in 1768, but was unseated in 1769. In 1773 he succeeded to the peerage, and was a constant speaker in the house of lords. Known as the Bad Lord Lyttelton, he pursued a vicious life notorious even in that age, but was regarded as a man of ability. On Nov. 24, 1779, being apparently in good health, he dreamed he was warned by a woman that he had only three days to live. On the 27th, at Hill Place, Epsom, he died just before midnight. It has been stated that he suffered from heart disease and took drugs. On his death the barony became extinct. It was revived 1794 in favour of an uncle, William Henry Lyttelton (1724-1808). A *Life of Thomas*, 2nd baron, by R. Blunt, came out in 1936.

**Lyttelton, GEORGE WILLIAM LYTTTELTON**, 4TH BARON (1817-76). British publicist. Eldest son of the 3rd Lord Lyttelton, of the second creation, he was born in London, March 31, 1817. Educated at Eton and Trinity College, Cambridge, he was bracketed senior classic in 1838. In 1837 he had succeeded to the peerage, and in 1846 was made under-secretary for the colonies, but his main interests were outside politics. He joined in founding the Anglican settlement of Canterbury, N.Z., a fact commemorated by the name of the borough of Lyttelton. He was an active supporter of the



H. Francis Lyte,  
British hymn writer  
After J. King



2nd Baron Lyttelton,  
British politician



1st Baron Lyttelton,  
British politician



4th Baron Lyttelton,  
British publicist

Church of England, and during 1869-74 was chief commissioner of endowed schools. On April 19, 1876, in a melancholy fit he threw himself from a staircase, dying soon afterwards. Lyttelton married in 1839 the younger daughter of Sir Stephen Glynne, whose elder daughter on the same day married Gladstone. Of their eight sons, one became Viscount Cobham, and three others are noticed below.

**Lyttelton, ALFRED (1857-1913).** British politician and athlete. Born Feb. 7, 1857, the youngest



Alfred Lyttelton,  
British politician  
Russell

son of the 4th Lord Lyttelton, he was educated at Eton and Trinity College, Cambridge, and was called to the bar at the Inner Temple. After taking silk he became successively recorder of Hereford and of Oxford and chancellor of the diocese of Rochester. In 1895 he was returned to parliament as Unionist M.P. for Warwick and Leamington. He had acted as chairman of the Transvaal concessions commission in South Africa, and on his return in 1903 he was chosen colonial secretary. It was his lot to face the storm that arose about the employment of Chinese in the Transvaal. In 1906 he left office and lost his seat at Warwick, but was returned the same year for St. George's, Hanover Square, and kept the seat until his death, July 5, 1913.

If only of average ability as a politician, Lyttelton was a supreme athlete. At almost every ball game he was a master. At Eton and Cambridge he captained the cricket eleven, and he kept wicket for England against Australia. He played association football for England; rackets and football for Cambridge, and 1882-95 was amateur champion at tennis. He was twice married, first to Laura Tennant, then to Edith Balfour, who wrote his Life, 1917.

**Lyttelton, EDWARD (1855-1942).** A British schoolmaster. Born in London, July 23, 1855, the seventh son of the 4th Lord Lyttelton, he was educated at Eton and Trinity College, Cambridge. Like his brothers, he was a fine cricketer, and captained the university eleven. He began teaching in 1880 at Wellington College, and in 1882, after taking holy orders,

went to Eton. From 1890 he was headmaster of Haileybury until in 1905 he was chosen head of Eton. He resigned in 1916, and during 1918-20 was rector at Sidestrand, Norfolk. He wrote *Cricket, 1890; Character and Religion, 1912; Whither? 1931.* He died Jan. 26, 1942.



Edward Lyttelton,  
British schoolmaster  
Russell

**Lyttelton, SIR NEVILLE GERALD (1845-1931).** British soldier. Born Oct. 28, 1845, 3rd son of the 4th Lord Lyttelton, he went to Eton and Sandhurst, and was commissioned in the Rifle Brigade in 1865. He served against the Fenians in Canada, 1866, and in Egypt, 1882, before commanding a brigade in the Nile expedition, 1898, and a division in the S. African War. He was c.-in.-c. in S. Africa, 1902-04, being knighted in 1902. Next he was chief of the general staff, and during 1908-12 was c.-in.-c. in Ireland. Lastly he was appointed governor of Chelsea Hospital. His reminiscences were published in 1927, under the title *Eighty Years*. Died July 6, 1931.

**Lyttelton, OLIVER (b. 1893).** British politician. Eldest son of Alfred Lyttelton (q.v.), he was born March 15, 1893. Educated like many of his family at Eton and Trinity, Cambridge, he was in the army throughout the First Great War. A City business man, in 1939



Oliver Lyttelton,  
British politician

he was appointed controller of non-ferrous metals in the ministry of supply, but did not enter parliament until 1940, when he became Conservative member for Aldershot. In Oct., 1940, he became president of the board of trade, but relinquished this post in July, 1941, to go as minister of state to the Middle East. He was minister of production from 1942 until the dissolution in 1945.

**Lytton, EDWARD ROBERT LYTTON, 1ST EARL OF (1831-91).** British diplomatist and poet. Born in London, Nov. 8, 1831, son of the 1st Baron Lytton, he was educated at Harrow and Bonn, and began his diplomatic career in 1849 as private secretary to his uncle, Sir Henry

Bulwer, the British minister at Washington. He occupied positions in the embassies at Florence, Paris, The Hague, Vienna, Athens, Lisbon, and Madrid. In 1873 he succeeded his father in the barony; in 1876 he was appointed viceroy of India. On his resignation in 1880 he was created an earl. From 1887 he was again ambassador in Paris, where he died Nov. 24, 1891.

Known as an author by the pseudonym of Owen Meredith, he wrote *Clytemnestra and Other Poems, 1855; The Wanderer, a collection of lyrics, 1857; Lucile, a tale in verse, 1860; Glenavert or the Metamorphoses, a narrative poem, 1885; King Poppy, 1892.* His poetry is facile and cultured, but lacking in inspiration. He published two volumes of a biography of his father in 1883.

**Lytton, VICTOR ALEXANDER GEORGE ROBERT LYTTON, 2ND EARL OF (1876-1947).** A British administrator and author. Son of the 1st earl, whom he succeeded in 1891, he was born at Simla, Aug. 9, 1876, and educated at Eton and Trinity College, Cambridge. In 1901 he was assistant to the secretary for Ireland. Civil lord of the Admiralty, 1916, and under-secretary for India, 1920, he was governor of Bengal, 1922-27, during a period of unrest, and viceroy of India, April-Aug., 1925.

From 1927 he played a leading part in the work of the League of Nations Union. In 1932 he was chairman of the commission on Japan's occupation of Manchuria. As a result of the Lytton report, Japan was condemned by the League of Nations for having taken military action, and in 1933 she gave notice to quit the League. The earl's advocacy of internationalism was carried on in the United Nations Association, of which he was chairman at the end of the Second Great War. Lytton did much to promote social clubs, and was interested in town planning and in the arts, being president of the Royal Society of Literature. He wrote a biography of his grandfather, the 1st baron, 1913; *The Web of Life, 1938; Pundits and Elephants (autobiography), 1942; Love Incarnate, 1946.* Antony: *A Record of Youth, 1935*, commemorated his elder son, Viscount Knebworth.



1st Earl of Lytton,  
British diplomatist

killed flying in 1933. As his younger son was killed in action in 1942, a brother, Neville Stephen (b. Feb. 6, 1879), succeeded to the title when Lord Lytton died, Oct. 25, 1947.

**Lytton, EDWARD GEORGE EARLE** LYTTON BULWER-LYTTON, 1ST BARON (1803-73). British writer and statesman. Born in London, May 25, 1803, he was the 3rd son



*Lytton*

From a drawing by D. Laugée

of General Bulwer, of Wood Dalling, Norfolk, his mother being a Lytton of Knebworth, Herts. From private schools and tutors he proceeded to Cambridge, Trinity College and then Trinity Hall. A precocious child, he began to write verse at seven.

Of his many novels, which enjoyed a tremendous contemporary vogue, and some of which, like others among his works, were issued anonymously, the more notable are *Pelham*, 1828; *Paul Clifford*, 1830; *Eugene Aram*, 1832; *The Last Days of Pompeii*, 1834; *Rienzi*, 1835; *The Last of the Barons*, 1843; *Harold*, 1848; *The Caxtons*, 1849; *My Novel*, 1853; *What Will He Do With It?* 1858; *The Parisians*, 1873; *Kenelm Chillingly*, the same year and to some extent autobiographical. He wrote short stories, *The Haunters* and *The Haunted*, 1857; *A Strange Story*, 1862; also a prophecy of the future, *The Coming Race*, 1871. Of his plays, *The Lady of Lyons*, 1838; *Richelieu*, 1839; and *Money*, 1840, have been occasionally revived. His other works include *England and the English*, 1833; *Athens, Its Rise and Fall*, 1837.

At first a Liberal in politics, Bulwer was M.P. for St. Ives, Hunts, 1831, and Lincoln, 1832-41. He sat for Herts as a Conservative, 1852-66, and was colonial secretary, 1858-59, displaying much administrative insight and ability. Made a baronet in 1838, when he inherited Knebworth and adopted the name of Bulwer-Lytton, he was created a baron in 1866, a G.C.M.G. in 1870, and was twice lord rector of Glasgow university. In 1827 he married Rosina Doyle Wheeler (1802-82), by whom he had one son, Edward Robert (1831-91), the 1st earl of Lytton; and one daughter, Emma (1828-48). The marriage was opposed by his mother; husband and wife separated in 1836, and the story of their unhappiness is one of the most poignant in English literary history. He died at Torquay, Jan. 18, 1873, and was buried in Westminster Abbey.

Lytton revived the novel, and with Carlyle and Coleridge helped to introduce German scholarship to England. Despite the variety and volume of his work, he was a writer whose industry was as remarkable as his versatility. He lacked taste and was deficient in characterisation. He over-sentimentalised and over-moralised; his melancholy drifted into the tedious or approached the maudlin. But he knew how to fashion a plot, was a sincere student in letters and in the region of the occult, and in spite of all his defects there is much in his novels, speeches, essays, and correspondence that is of permanent interest and value. The first to give encouragement to Browning in print, he worked in and out of parliament for his fellow authors.

**W. F. Aitken**  
*Bibliography.* Works, 37 vols., 1873-75; Lives, T. Cooper, 1873; 2nd earl of Lytton, 1913; Letters to his Wife, 1884; A Panorama, M. Sadleir, 1931.

**Lytton, SIR HENRY ALFRED** (1867-1936). British actor. Born in London, Jan. 3, 1867, he was educated at S. Mark's College, Chelsea, and later joined the chorus of the D'Oyly Carte touring company, first appearing in



Sir Henry Lytton,  
British actor

Sullivan repertory. He played in all as many as 30 of these characters, but eventually was chiefly identified with the comedy parts originally played by Grossmith, e.g. Ko-Ko, in the *Mikado*; Jack Point in the *Yeomen of the Guard*. For 25 years from 1909 he appeared exclusively in these operas, reaching wide popularity. His impish sense of fun was admirably suited to their peculiar form. After his retirement from the D'Oyly Carte co., he appeared in pantomime at Birmingham. Knighted in 1930, he retired in 1934, the jubilee year of his first appearance. He published *Secrets of a Savoyard*, 1922; *A Wandering Minstrel*, 1933. Lytton died Aug. 15, 1936.




**Lytton, ROSINA DOYLE BULWER-LYTTON, LADY** (1802-82). Wife of the first Baron Lytton (q.v.). Born Nov. 2, 1802, at Ballywire, co. Limerick, daughter of F. M. Wheeler, she passed an early home life almost without restraint. When 10 she accompanied her mother on a long visit to Sir John Doyle, governor of Guernsey, with whom, during her mother's absence in France, she afterwards lived in London, becoming associ-







Rosina, Lady Lytton  
From a drawing by  
A. E. Chalon

ated with Lady Caroline Lamb and others of the Bohemian literary set. Her engagement to Bulwer was broken off three times before the marriage took place in Aug., 1827. Before the final separation she lived with her husband at Woodcot House, Oxon, at 36, Hertford Street, London, and at Berrywood Priory, Acton. Later she passed a wandering life at Bath, Paris, Florence, Geneva, Llangollen, and Taunton. In 1875 she took a small house at Upper Sydenham, where she died March 12, 1882. She was buried in the churchyard of S. John the Evangelist, Shirley, Surrey. She was the author of 13 novels, some poems, and a book of essays, *Shells from the Sands of Time*, 1876. Novels, include *Cheveley*, or the Man of Honour, 1839; *Budget of the Bubble Family*, 1840; *Bianca Capello*, 1842; *Behind the Scenes*, 1854; *Very Successful*, 1856; *The World and His Wife*, 1858; *Mauleverer's Divorce*, 1871.

**Lyublyana.** The fourth city of Yugoslavia is in this Encyclopedia spell Ljubljana.

THE Egyptian hieroglyph (c. 5000–4000 B.C.) corresponding most nearly to the letter M represented an owl: . The suggestion of horns and beak is traceable in every form of the letter throughout its evolution, and remains today. The simplified Egyptian hieratic form (3000–2000 B.C.) was . The early Phoenician (1000 B.C.) as well as the Semitic form carved on stone were more angular in character . The Hebrew name of the letter was *mem*, meaning waters, presumably from the suggestion of waves or ripples.



The earliest Greek forms retained the long tail , but otherwise the development into the classic Greek *mu*  is clear, the tail being retained in the minuscule . Even early Latin had the tail , but the classic Roman followed the classic Greek, adding only the usual serifs and other refinements. The condensed or perpendicular form M was introduced by medieval copyists, while the small m of modern typography is derived directly from the cursive pen form of the Roman capital letter.

**M** Thirteenth letter of the English and Latin alphabets. One of the labial consonants, its articulation is that of *b*, except that the breath passes through the nose, whence it is often called a labio-nasal. M always has the same sound, as in *mat*, *stem*. In words beginning with *mn*, derived from the Greek, as *mнемоника*, it is mute, though note *colum-nar* and *hym-nal*. It has considerable affinity with *n* (cf. *emmet* and *ant*), and with *b*, the latter being mute when combined with it finally (*numb*, *thumb*). As a symbol in Roman notation *M*=1,000, *M̄*=1,000,000. See *Abbreviations*; *Alphabet*; *Phonetics*.

**Maars.** In geology, hollows or depressions in the land surface formed by isolated volcanic explosions. The depressions are described as embryonic or abortive volcanoes, and, having in most cases become filled with water, they form roughly circular lakes. The name is derived from occurrences in the Eifel district of Germany, where they are known as *maare*, or crater-lakes.

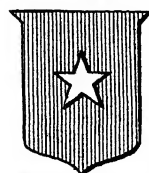
**Maartens, MAARTEN.** Pen-name of the Anglo-Dutch novelist, Joost Marius Willem van der Poorten Schwartz (1858–1915). Born at Amsterdam, Aug. 15, 1858, he was educated in England and at Bonn

university, and for a time was a lecturer on law at Utrecht. He began, in 1889, the publication of a series of novels giving a realistic picture of life in contemporary Holland. They were published simultaneously in Dutch and English. His principal works are *The Sin of Joost Avelingh*, 1890; *God's Fool*, 1892; *The Greater Glory*, 1894; *Some Women I Have Known*, 1901; *My Poor Relations*, 1903; *Dorothea*, 1904; *Brothers All*, 1909; *Harmen Pols*, *Peasant*, 1910. He died at Doorn, Aug. 5, 1915.

**Maas** (Fr. *Meuse*). Dutch name given to that part of the river called *Meuse* in France and Belgium which flows through the Netherlands from a little S. of Maastricht to its mouth. It played an important part in the operations of the Second Great War. German parachutists seized the Moerdijk bridges (*q.v.*) when the Germans invaded the Netherlands on May 10, 1940, and so cut communications between the N. and S. provs. In 1944 the Germans stood along the right bank of the river from Blerik to its mouth, in Nov., the upper reaches being freed by the U.S. 9th army at the beginning of March, 1945; but the mouth only with the German surrender in May. See *Meuse*.

**Maassluis.** Town and port of the Netherlands, in the prov. of S. Holland. It lies 10 m. by rly. W. of Rotterdam, on the N. bank of the Nieuwe Waterweg, which joins Rotterdam with the North Sea. It is a centre of the herring fisheries.

**Maastricht.** A town of the Netherlands, capital of the prov. of Limburg. It lies on the left bank of the Maas, close to the Dutch-Belgian frontier, 19 m. by rly. S.S.W. of Hasselt. The rly. station is in the suburb of Wyk, on the right bank of the river.



Maastricht arms

There is a large volume of riverwise traffic to and from the docks of the town, and among the industries are paper, pottery, and earthenware, glass, and brewing manufactures. There is steam tramway connexion with Tongeren, Glons, and Maeseyck, and from the station to Vaals on the German frontier. Pop. 73,181.

The church of S. Servatius is a 6th century foundation. The 11th century church of Our Lady has been extensively restored and has fine Gothic cloisters. The *Stadhuis*, completed in 1664, with a clock-tower, stands in the middle of the *Groote Markt*.

Maastricht was the site of a Roman crossing of the Maas (*Trajectum ad Mosam*), and was the seat of some of the Frankish kings. Unsuccessfully rebelling against the Spaniards in 1576, it was recaptured by them in 1579, by Frederick Henry of Orange in 1632, by the French in 1673, in 1748 under Maurice de Saxe, and in 1794 under Kléber, but resisted a Belgian attack in 1830. The Germans captured Maastricht on May 11, 1940. The bridges over the Maas were blown up, but two bridges on the Albert Canal were left intact. The U.S. 1st army liberated Maastricht—first Dutch town to be freed—Sept. 14, 1944.



Maastricht, Holland. Town Hall, built 1658–64; on right, archways and street beneath the church of S. Servatius

**Maat.** An Egyptian goddess. Linked with Ra and Thoth, she personified physical and moral law, and as the goddess of truth was identified with the Greek Themis. Without temples or offering, she presided in the judgement hall of Osiris when souls were weighed. In figurines of bronze, lapis-lazuli, or glass, and in other representations, she wears an ostrich feather and is sometimes blindfold. Judicial officials were allegorically called priests of Maat.

**Mab, QUEEN.** Character in fairy and folk lore. By some writers, e.g. Ben Jonson (*The Satyr*) and Herrick (*Hesperides*), she is referred to as queen of the fairies; by others, e.g. Shakespeare (*Romeo and Juliet*, 1, 4) and Sir Walter Scott (*The Antiquary*), she is described as the fairies' midwife, who delivers men's minds of dreams. The word queen, in this connexion, is used to indicate, not a sovereign, but a woman or queen. Shelley makes his Queen Mab a ruler of men's thoughts.

**Mabinogion, THE.** Collection of 12 ancient Welsh tales, first published in an English translation by Lady Charlotte Guest in 1838. Mabinogion is derived from Mabinog, an aspirant to bardic honour. The tales comprise 11 prose pieces from *The Red Book of Hergest* (q.v.) and *Taliesin*, which is largely in verse. They are roughly divisible into four groups: 1, *Pwyll, Branwen, Manawyddan, and Math*, regarded as survivals of Celtic mythology; 2, *The Dream of Macsen Wledic* (Maxentius), and *Luudd and Llewelys*, old-world Welsh stories; 3, *Kilwhch and Olwen, The Dream of Rhonabwy, The Lady of the Fountain, Pederdur, and Geraint*, romances connected with the Arthurian cycle; and 4, *Taliesin* (q.v.).

**Mablethorpe and Sutton.** Urban district comprising the parishes of Mablethorpe, Trusthorpe, and Sutton-on-Sea, seaside holiday resorts on the coast of Lincs, England. There are rly. stations at Mablethorpe and at Sutton. The district, 13 m. E. of Louth, is the nearest holiday resort for the industrial centres in the East Midlands, and has developed rapidly, chiefly on account of its 6 m. of sands, good bathing, and bracing air. The beach is backed by promenades behind which are sand dunes, preserved as open spaces. At the lowest tides a submerged forest and a Roman villa are exposed. Pop. 5,650.

**Mabon** (Welsh, bard). Name given to William Abraham (q.v.).

**Mabuse, JAN GOSSAERT DE** (c. 1472–1532). A Flemish painter. Born at Maubeuge, or Mabuse, in Hainault, he probably studied under Quinten Matsys, and in 1503 was admitted to the guild of S. Luke, Antwerp. He was employed by Philip of Burgundy, and visited Rome with him in 1508, where he studied Leonardo and Michelangelo. At Mechlin, 1516, he painted Leonora of Austria, sister of Charles V, and in 1517 he decorated the castle of Duerstede for Philip. The chief works of his early pre-Italian period are *The Adoration of the Kings*, in the National Gallery, London, *Christ in Gethsemane*, and portraits of Philip the Fair and Joanna of Castile, at Brussels. Of his later works, the most important include a *Madonna and Child* at Brussels, *Virgin with the Grapes*, in Berlin, about 1509, S. Luke drawing the *Madonna*. He is usually thought to have been the first to introduce into the purity of Flemish painting that alien Italian note which, degenerating rapidly into rococo banality, led to its decline. He died Oct. 1, 1532.

**Mac** (Gael., son). Celtic prefix of common occurrence in Scottish and Irish names. It answers to Irish O', Norman Fitz, Welsh Ap, Semitic Ben, Ibn, and English -son. It is variously written—Macalister, MacAlister, M'Alister, McAlister. In this work the names of this kind are alphabetised as if the Mac were spelled out.

**Macabre.** French word meaning grisly, and especially associated with the *danse macabre*, or Dance of Death. It is perhaps so called because the tortures of the seven brothers referred to in 2 *Maccabees* 7 possibly formed the subject of the first pictures of the kind shown in Paris, a theory which accounts at least for the Latin name of the performance, *Chorea Machabeorum*. See Dance of Death.

**McAdam, JOHN LOUDON** (1756–1836). Scottish engineer. Born at Ayr, Sept. 21, 1756, he lived in



J. L. McAdam,  
Scottish engineer

as revictualler of the navy, he experimented in the making of roads, and came to the conclusion that

they should be constructed of successive layers of granite or greenstone, broken into small lumps. In 1815, surveyor-general of the Bristol roads, he employed the method he had invented which in time was generally adopted and called macadamising. He received £10,000 from parliament, was appointed surveyor-general of metropolitan roads in 1827, and died Nov. 26, 1836. *Consult* Life, R. Devereux, 1936.

**McAlester.** County seat of Pittsburg co., Oklahoma, U.S.A. The city lies 61 m. S.S.W. of Muskogee and has a rly. junction and an airport. Settled about 1885, it was incorporated in 1906. The state's biggest oilfields are near, natural gas is abundant, and coal mines employ many. Lumbering and woodworking, foundries and rly. workshops, and processes connected with cotton are other industries. Pop. 12,400.

**MacAlister, SIR DONALD** (1854–1934). Scottish scientist. Born at Perth, May 17, 1854, he was



Sir D. MacAlister,  
Scottish man of  
science  
Russell

educated at Aberdeen, Liverpool, and S. John's College, Cambridge, where he graduated as senior wrangler and first Smith's prizeman in 1877. He was mathematical master at Harrow, studied medicine at Cambridge and at S. Bartholomew's Hospital, London, and made researches in the physiology of heat production under Ludwig at Leipzig. As F.R.C.P., president of the general medical council, and the holder of numerous professorships, he became principal and vice-chancellor of Glasgow university in 1907, remaining until 1929. He edited *The Practitioner*, 1882–94, and was author of an English edition of Ziegler's *Pathological Anatomy*, 1883. He was made K.C.B. in 1908, a baronet in 1924, and died Jan. 15, 1934.

**Macalister, ROBERT ALEXANDER STEWART** (1870–1950). Irish archaeologist. Born in Dublin, July 8, 1870, he directed excavations for the Palestine Exploration Fund, 1900–09 and 1923–24. His work at Gezer was described in *Bible Side-lights from the Mound of Gezer*, 1906, and in exhaustive reports. He also wrote *A History of Civilisation in Palestine*, 1912; *The Philistines*, 1913. Works on Ireland including *Two Irish Arthurian Romances*, 1908, led to his



appointment as professor of Celtic archaeology at Dublin, a position he held until 1943. Later works dealt with early Irish history. He died at Cambridge, April 26, 1950.

**McAll, ROBERT WHITAKER** (1821-93). A British divine. Born in Macclesfield in 1821 and educated at London university, he became a Congregational minister, and had charge of churches in several towns until 1872. In that year he started the mission work at Belleville, a suburb of Paris, which developed into the McAll mission. He died at Auteuil, May 11, 1893. The Mission Populaire Évangélique de France—in short, the McAll mission—has stations in France, Algeria, and Corsica.

**McAlpine, SIR ROBERT** (1847-1934). British contractor, born at Newarthill, Lanarkshire, Feb. 13, 1847. Having served an apprenticeship as a brick builder, he set up in business and within five years he had established himself, his firm being responsible for the erection of large buildings in Motherwell, Hamilton, and other places. He built railways and public works, including the central underground rly., Glasgow, and the Glasgow sewage scheme. By 1918 the firm was known all over the world, and McAlpine was created a baronet. He died Nov. 3, 1934.

**Macao.** Portuguese colony at the S. extremity of the West River delta, China, 40 m. S.W. of Hong Kong. The area of the territory, including the islands of Taipa and Colôane, is about 10 sq. m. and the pop. 374,737. The Portuguese settled here in 1557, and until 1849

paid a tribute to China. In that year payment was refused and the Chinese authorities were expelled from the settlement, but it was not until 1859 that Macao achieved its complete independence. In 1887 China formally acknowledged Portuguese sovereignty.

Macao is administered by a governor with the assistance of a council and legislative chamber. It has played only a small part in the commercial life of the Far East, as few steps were taken to develop the colony, which, further, was completely eclipsed by Hong Kong. Its main trade consists of the transit of miscellaneous goods, mostly handled by Chinese merchants.

**Macaque.** Group of monkeys found in S. Asia, and including the Barbary ape occurring in N. Africa and on the rock of Gibraltar. All

the macaques are of stout build, with longish muzzles and rather large callosities on the buttocks. The tail may be long, short, or absent. They live in troops in the forests, where they lead a very active life, and feed upon almost anything eatable that they can find. The Rhesus monkey, in favour with organ-grinders owing to

its hardy constitution belongs to this genus, and is found throughout N. India, where it is protected by the Hindus. See Monkey.

**Macara, SIR CHARLES WRIGHT** (1845-1929). A British manufacturer. Born Jan. 11, 1845, at Strathmiglo, Fife, Scotland, he was educated in Edinburgh, and became a master cotton-spinner in Lancashire. A leading figure in the cotton industry, he was largely responsible for the Brooklands

agreement of 1893, which provided machinery for settling industrial disputes by negotiation. In 1894 he became president of the English federation of master cotton-spinners, and in 1904 of the international federation. He was actively concerned in social and industrial

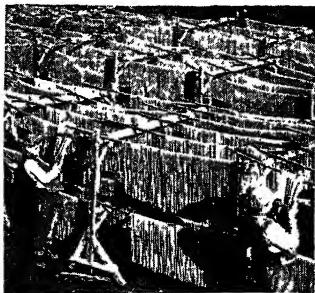
reform, and wrote a number of books on the subject. A supporter of lifeboat work, he founded in 1891 the Lifeboat Saturday movement. He died Jan. 2, 1929.

**MacArdell, JAMES** (c. 1729-65). Irish engraver. Born in Dublin, about 1746 he came to London.

where one of his first plates was the humorous Teague's Ramble at Charing Cross, 1747, followed by many portraits from 1748 onwards. His engraving of Van Dyck's portraits of the sons of the duke of Buckingham, 1752, attracted much attention.

The year 1754 saw the appearance of the first of his series (38 plates) of prints after Sir Joshua Reynolds, Lady Charlotte Fitzwilliam, and the earl and countess of Kildare. Some of his best work was done from portraits by Van Dyck, such as the countess of Southampton, Lords John and Bernard Stuart. He interpreted Gainsborough, Cotes, Lely, also Rembrandt and Rubens. Plates of his own design include Quin as Falstaff and Garrick as Puff in Taste. He produced also a few etchings. His work had great influence on the engravers who followed him. He died in London, June 2, 1765.

**Macaroni** (Ital. *maccheroni*). A farinaceous food, made from a hard wheat, rich in gluten. After



Macaroni. Lengths of macaroni hanging over rods to dry in the sun

husking, the wheat is ground into flour which is kneaded into a paste. The dough is placed in a cylinder perforated at the bottom, and pressed (by a heavy plate which fits into the cylinder) through the perforations in tubes or strips according to the arrangement of the holes. The macaroni is then cut into lengths and hung over



Macaque. Specimens of *M. sinica*, the bonnet monkey of India and Ceylon  
W. S. Beridge, F.Z.S.



Macao, China. The bay and town from the south



James MacArdell,  
Irish engraver  
Self-portrait

rods to dry. It becomes soft when boiled and swells a good deal, but retains its shape. Macaroni keeps for any length of time and is a nutritious article of food. The paste of macaroni is made into spaghetti, solid and cord-like, into vermicelli, which is finer than spaghetti, and into various small shapes such as stars, squares, letters, and crescents, used in soup. Formerly only made in Italy, where it forms a staple article of food, it is now also manufactured in the U.K., France and other countries.

**Macaroni.** Member of an English 18th century clique. They were so called from their introducing that Italian dish into England. Having imbibed Continental tastes and fashions while on the grand tour, a group of young men formed the Macaroni Club, of which C. J. Fox was a prominent member. The Macaronis were conspicuous for affectations and fantastic costumes. The chief features of their dress were large side curls with a knot behind, a very small three-cornered hat, tight short coat, flowered waistcoat, huge white neck-cloth, striped or spotted silk breeches adorned at the knee with bunches of ribbons, white silk stockings, and diamond-buckled shoes. They sometimes wore a hanger, or short curved sword,



Macaroni, as depicted in a print, early 18th century

From *English Costume*, J. Clinch, by courtesy of Methuen & Co., Ltd.

and carried tall tasselled canes. They disappeared before the end of the century.

**Macaronic Verse.** Ludicrous kind of verse written partly in Latin and partly in vernacular words with Latin terminations. The term is believed to have been

first employed by Teofilo Folengo (1491-1544), a dissipated Benedictine monk, who, under the pseudonym of Merlinus Coccaius, published a volume of *Macaronia* in 1517. An example in French literature is the burlesque ceremony of admission of Molière's *Malade imaginaire* to the degree of doctor of medicine. *Consult Specimens of Macaronic Poetry*, W. Sandys, 1831.

**Macaroon.** Name given to a biscuit usually composed of sugar, white of egg, and ground almonds, though sometimes including coconut. The word is a variant of macaroni. *See* Biscuit.

**MacArthur, DOUGLAS** (b. 1880). U.S. soldier and administrator. Born Jan. 26, 1880, in Little Rock barracks, Arkansas, the son of Lt.-Gen Arthur MacArthur, he graduated from West Point in 1903. Commissioned in the engineer corps, he was gassed and wounded in action and promoted from major to temporary brig.-gen. during the First Great War. Made a maj.-gen., Jan., 1925, he was the youngest holder of that rank in the U.S. army. During 1922-25 he was in the Philippines, became commander Philippine dept. 1928, and U.S. chief of staff, with the rank of full general on Nov. 21, 1930. During the next five years he reorganized U.S. defences, enlarged the army air corps, and mechanised the army.

In Oct., 1935, at the request of President Quezon of the Philippines, he relinquished his post in the U.S.A. to become military adviser to the Philippine govt., which appointed him, June 19, 1936, F.M. of the Philippine army. Retiring from the U.S. army Dec., 1937, he continued to act as head of Filipino military and constabulary services. In July, 1941, he was recalled to active service as a lieutenant-gen. and given command of U.S. and Filipino forces in the Philippines.

On Dec. 19, 1941, he was restored to the rank of full gen., and, although his forces in Luzon were inferior to the invading Japanese in numbers and material, he slowed down their advance, withdrawing with a mixed force of some 47,000 to

Bataan pen., W. of Manila. There, lacking air support and receiving no reinforcements, supplies, or ammunition, his men beat off attack after attack, maintaining their position for a month after, on Roosevelt's orders, he had left Bataan, March 11, 1942. His appointment as c.-in.-c. of the newly constituted S.W. Pacific area was announced from his Australian h.q., April 19.

Towards the end of Sept., 1942, Australian and U.S. forces of his command began in New Guinea the counter-offensive against the Japanese in his area. In the campaign that followed (described under Pacific War) he led his forces in person in many of their hazardous landings: e.g. on Los Negros in the Admiralty Is., Feb. 29, 1944; on Morotai in the Moluccas, Sept. 14; on Leyte, Oct. 20, 1944, and Luzon, Jan. 9, 1945, in the Philippines; on Labuan, June 10, and Balikpapan, July 1, off Borneo.

MacArthur, who had been promoted one of the first four generals of the army at the creation of that rank Dec., 1944, was made, Aug. 4, 1945, commander of U.S. army forces in the Pacific and, after Japan's surrender, supreme commander for the Allied powers in Japan, where he arrived by air Aug. 30, and set up his h.q. at Yokohama. Chief signatory for the Allies at the surrender ceremony, Sept. 2, 1945, on board the U.S. battleship Missouri in Tokyo Bay, he became virtual dictator of Japan, inaugurating changes of constitution and administration with the object of creating in that country a form of government akin to that of a western democracy. He was created G.C.B. (hon.), 1943, and received the congressional medal of honour and other U.S. and foreign decorations.

**MacArthur, MARY** (1880-1921). Maiden name of Mrs. W. C. Anderson, a champion of the cause of women workers. Born at Ayr, Aug. 13, 1880, she was educated at Glasgow and in Germany. After serving as a clerk in her father's business she became an organizer of shop assistants, was secretary of the women's trade union league, and formed the national federation of women workers. Under the conditions created by the Trade Boards Act, 1909, she organized the chain workers of Cradley Heath, thereby improving the condition of women workers in the Black Country. She did much work in Bermond-



Douglas MacArthur, U.S. soldier and administrator

sey, at the invitation of Queen Mary became hon. secretary of the central committee of women's unemployment during the First Great War, and had a share in promoting the Wages (Temporary Regulation) Act. In 1911 she married W. C. Anderson (d. 1919), Labour M.P. for Attercliffe. She died Jan. 1, 1921.

**Macartney, GEORGE MACARTNEY, 1ST EARL (1737-1806).** British diplomatist and administrator. He was born May 14, 1737, educated at Trinity College, Dublin, and studied in the Middle Temple. Sent to Russia in 1764, where he successfully concluded a commercial treaty, he became chief secretary for Ireland, 1769-72, and was afterwards governor of the Caribbee Islands, and of Madras. Created an earl in 1792, he was sent as the first British ambassador to Peking, where he was graciously received, but a resident embassy not being conceded by China he returned in 1794, becoming two years later governor of Cape Colony. His health failed and, resigning in 1798, he died May 31, 1806. *Consult* Our First Ambassador to China, H. M. Robbins, 1908.

**Macartney, CHARLES G. (b. 1886).** Australian cricketer, born June 27, 1886. An all-round player for New South Wales, he first came to oppose England in 1909, succeeding as a slow left-hand bowler. On the 1912 tour he scored 2,207 runs. By 1921 he had so developed his individual style of batting that he headed the Australians' averages in England with 58, playing an innings of 345 against Notts. At 40 "the governor-general" still took the eye among the tourists of 1926, when his batting average was 53 (for test matches 94) and his wickets cost less than 18 runs apiece.

**Macartney, SIR SAMUEL HALLIDAY (1833-1906).** Anglo-Chinese official. Born near Castle Douglas, Kirkcudbrightshire, May 24, 1833, he studied medicine at Edinburgh university, and graduating M.D. in 1858, entered the army medical department, serving in India and China, 1859-62. He joined the Chinese service in 1863, came into closer relations with Li Hung-Chang, was in charge of the arsenal at

Nanking, 1865-75, and was secretary to the Chinese legation in London, 1877-1906. Given mandarin rank by the Chinese government, he was made K.C.M.G. in 1885. He died June 8, 1906.

**Macas.** Town of Ecuador, in the prov. of Chimborazo. It stands on the Marona river, one of the headstreams of the Marañon, 150 m. S. of Quito. It is built in a valley between two Andean ridges, and is mainly occupied in stock raising and the cultivation of cocoa and tobacco. Pop. 7,000.

**Macassar.** Capital and seaport of Celebes, Indonesia. It lies in the S.W. of the island, at the mouth of the river Gowa. Already in the 16th century it was an entrepot for the spices of the Moluccas. During the 17th century it was the capital of a kingdom of the same name. There was a Portuguese factory here before the Dutch E. India Co. established its suzerainty over the kingdom in 1667. Exports today include

**Macassar Strait.** Channel of the Pacific Ocean. Situated between the island of Borneo and Celebes, it connects the Celebes Sea on the N. with the Java Sea on the S. In Jan., 1942, this strategically important seaway was the scene of a seven-day battle between U.S. and Netherlands warships and aircraft and a large Japanese convoy, escorted by cruisers and destroyers. The convoy was sailing S. with troops and munitions when it was intercepted by allied aircraft on Jan. 23, and a running fight ensued, which continued until Jan. 29. The Japanese losses were 34 ships sunk or badly damaged, with about 25,000 casualties.

**Macauley, THOMAS BABINGTON, BARON (1800-1859).** British historian. He was born at Rothley Temple, Leicestershire, Oct. 25, 1800, but spent most of his early youth at Clapham, whither his father Zachary Macaulay (q.v.), the son of a Scottish Presbyterian minister, had retired after making a modest fortune as a West Indian and African merchant. After a private school education the young Macaulay entered Trinity College, Cambridge, in 1818. As a boy he had shown extraordinary precocity, writing an epic at ten and a universal history at twelve. His reading was amazingly wide, and everything he read he remembered. Almost incredible stories are told of his power of memory, which he retained all through life. Except in mathematics, for which he had a profound distaste, Macaulay's career at Cambridge was a brilliant one crowned with a fellowship at Trinity in 1824.

Meantime the fortune of Zachary Macaulay had shrunk to small dimensions, largely as the result of philanthropic activities, and at 25 Thomas became the chief support of his family. The publication of his famous essay on Milton in The Edinburgh Review was the first effort that brought him fame. The editor, Jeffrey, was particularly struck with the originality of Macaulay's style. The connexion thus begun with the great Whig journal was continued for some twenty years.

Literature chiefly claimed his attention, but he was at the same time turning his mind in the direction of politics. In 1830 he entered parliament as member for Calne, and soon established a reputation as an orator by his speeches in favour of the Reform Bill. In 1833 he was member for Leeds, and in 1834 he



1st Earl Macartney.  
British diplomatist



Lord Macaulay, British historian  
After Sir Francis Grant

Macassar oil, pearls, rice, rubber, and tortoiseshell. The Japanese landed near Macassar Feb. 10, 1942, and occupied the town from Feb. 13 until the general Japanese surrender in the N.E.I. Sept. 9, 1945. Pop. 20,000.

**Macassar Oil.** Vegetable oil used in pharmacy, so called from the district of Macassar, where it is made. The oil is obtained from the fruit of the *Stadmannia suderoxylon* or *Schleichera trijuga*. The plant yields as much as 70 p.c. of oil, which is used extensively in perfumery. The once extensive use of the oil for the hair brought into use the antimacassar.

accepted the position of legal adviser to the supreme council of India, with a salary of £10,000 a year. It was chiefly the necessity of providing for his family, whom he dearly loved, that determined this decision. It was by his advice as chairman of the committee of public instruction that European literature and science were made the basis of higher education in India. He also took the leading part in drawing up the penal code. Macaulay's four years' stay in India is reflected in his Indian essays on Clive and Warren Hastings, and it was when abroad that he wrote most of the popular *Lays of Ancient Rome*, published in 1843. In 1839 he was elected member for Edinburgh, and became successively secretary for war and paymaster-general of the forces.

In 1848 appeared the first two vols. of his *History of England* from the Accession of James II, upon which he had been at work for some time. It was his intention to bring it down to a time "within the memory of men still living," but he failed to get farther than the closing years of the reign of William III. The second two volumes appeared in 1855 and the fifth posthumously in 1861. The work enjoyed amazing popularity from the first. Rejected for Edinburgh at the general election of 1847, Macaulay was again elected in 1852, and in 1857 he was raised to the peerage. Two years later, Dec. 28, 1859, he died in London, and was buried in Westminster Abbey.

Macaulay cannot be classed among the greatest historians. Thanks to his extensive reading and prodigious memory he possessed a wide knowledge of many subjects upon which he constantly drew for illustration, often with the happiest effects, but he was not profound. His general outlook, too, was biased by his Whig sympathies, which on occasion led him into misrepresentation of facts, if not into positive inaccuracies. A conspicuous example of his lack of impartiality is to be found in his treatment of Marlborough. Again, he has a tendency to sacrifice absolute truth to the desire for effect, yet with all its faults his *History* will always be read for its brilliant style. As a lucid and picturesque narrator of events Macaulay is almost unsurpassed, e.g. in the famous "third chapter," describing England in 1685. In some respects he is at his best in his many essays on literary and historical subjects. The essay on Robt. Montgomery's

poems (1830) is one of the most devastating pieces of literary criticism ever penned.

**Bibliography.** Works, coll. by his sister, Lady Trevelyan, 8 vols., 1866; Albany edn., 12 vols., 1898; *Life and Letters*, G. O. Trevelyan, 2 vols, 1876; *Lives*, J. Cotter Morison, 1882; A. S. G. Canning, new ed. 1913; A. Bryant, 1932.

**Macaulay, ROSE.** A British novelist and essayist. She published her first book, *Abbots Verney*, in 1906 and established her reputation as a satirist with *Potterism*, 1920. In a series of witty, incisive novels she exposed the follies of her time. The best known were *Dangerous Ages*, 1921; *Told By An Idiot*, 1923; *Orphan Island*, 1924; *Crewe Train*, 1926; *Keeping Up Appearances*, 1928; *Going Abroad*, 1934. She also wrote a scholarly study of Herrick and his times in *They Were Defeated*, 1932. Two anthologies, *The Minor Pleasure of Life*, 1934, and *Personal Pleasures*, 1935, were successful. Her books of literary criticism included *John Milton*, 1933; *The Writings of E. M. Forster*, 1938; and *No Man's Wit*, 1940.

**Macaulay, ZACHARY** (1768-1838). Scottish philanthropist. Son of a Scottish minister, and the father of Lord Macaulay (q.v.), he was born May 2, 1768. At 17 he left his father's manse in the W.



Macaw Tree. Head of leaves with nuts

Highlands, and went to Jamaica, where he worked on a sugar plantation, of which he finally became manager. On his return to England he joined Wilberforce and others who were working to suppress the slave trade. Governor of Sierra Leone, 1796-99, he did much to remedy the appalling

conditions there. He was one of the founders of the anti-slavery society (q.v.) 1823. He died May 13, 1838. *Consult* *Life and Letters*, by Viscountess Knutsford; Z. Macaulay, C. Booth, 1934.

**Macaw.** Name given to various genera of South American parrots, noted for their gorgeous plumage and large size. Some are nearly 3 ft.



Macaw, a South American parrot

long, including the tail; the prevailing colours are red, blue, and yellow. There are about 14 species of typical macaws, found from Mexico to Paraguay. They feed in flocks upon fruits and nuts, and make their presence known by deafening cries. They are hardy in captivity, readily become tame, and will sometimes learn to talk. *See* *Beak*; *Birds*; *Parrakeet*.

**Macaw Tree** (*Acrocomia sclerocarpa*). Tree of the family *Palmae*, native of South America. It attains a height of about 40 ft., with a spreading head of large leaves divided into slender leaflets, 1 ft. in length, which, when young, are eaten as a vegetable. The yellowish flowers are produced at the base of the leaves. The hard shells of the nuts are made into ornaments, and from the kernels a thick yellow oil is pressed.

**Macbeth** (d. 1057). King of Scotland. Nephew of Malcolm II, and ruler of Moray, he married Gruoch, granddaughter of the king of Alban, and became King Duncan's commander-in-chief. He slew Duncan in 1040, succeeded him on the throne, was defeated by Siward earl of Northumbria, in 1054, and was slain by Duncan's son, Malcolm Canmore, at Lumphanan, Aug. 15, 1057. *See* *Scotland*; *History*. *Consult* *History of Scotland*, H. Boece, 1527; *Chronicle of Scottish History*, R. Holinshed, 1578; *Celtic Scotland*, W. F. Skene, 1876-80.

**Macbeth.** Tragedy by Shakespeare. Macbeth and Banquo, generals of King Duncan of Scotland, meet three witches who predict that Macbeth shall be king. Incited by his wife, he murders Duncan and assumes the crown. Before the murder he sees a dagger in the air; after it, he imagines a voice that cries "Sleep no more!

Macbeth does murder sleep." Less a hardened villain than a prey to "vaulting ambition that o'erleaps itself," Macbeth next hires two murderers, who kill Banquo. Having consulted the witches again, Macbeth is told that he shall never be vanquished till Birnam wood come to Dunsinane, his castle. His wife, the supreme evil woman in Shakespeare, falls ill, walks in her sleep, talking of the blood on her hand, and dies. Macbeth, observing that the invading English army with Malcolm, eldest son to Duncan, is carrying boughs cut from Birnam wood, perceives the significance of the witches' predictions and abandons hope, to be killed in single combat by Macduff, a thane whose wife and children he had caused to be murdered.

Macbeth was written in 1605 or 1606, and first published in the 1623 folio. Shakespeare was indebted to Holinshed, and may have consulted Reginald Scot's *Discoverie of Witchcraft*, 1584. This comparatively short tragedy contains 1,993 lines, including 158 of prose, 1,588 of blank verse, 118 pentametric rhymes, 129 short-line rhymes. No play contains greater poetry, while the imagery derived from animal life and nocturnal phenomena is notable. In theatrical tradition the play is unlucky and must not be quoted from.

Modern revivals in London were by Irving and Ellen Terry (Lyceum, 1888); Forbes-Robertson and Mrs. Patrick Campbell (Lyceum, 1898); Bouchier and Violet Vanbrugh (His Majesty's, 1909); Ainley and Sybil Thorndike (Prince's, 1926). Others who have essayed the part of Macbeth include John Gielgud, Charles Laughton, Laurence Olivier, Ernest Milton, Donald Wolfitt, Michael Redgrave. A modern dress version was staged by Barry Jackson at the Court Theatre, 1928.

**McBride, Sir Richard** (1870–1917). Canadian politician. Born at New Westminster, B.C., Dec. 15, 1870, he was educated at Dalhousie university, Halifax. A barrister, he entered the provincial legislature of British Columbia in 1898, became leader of the Conservative party, and was premier from 1903–15, then agent-general for the province in London. Knighted in 1912, he died Aug. 6, 1917.



Sir Richard McBride,  
Canadian politician  
Elliott & Fry

**MacBride, SEAN** (b. 1904). Irish politician, born Jan. 26, 1904, in Dublin. Son of an Irish patriot executed 1916, and of Maud Gonne, famous in connexion with the Irish independence movement, as a youth he led an I.R.A. brigade in the civil war. After the I.R.A. was declared illegal, he continued his activities with it, and was frequently in trouble with the police. Later, he studied law at Dublin university. Regarding Eamon de Valera as insufficiently nationalist, MacBride founded the reactionary party *Clann na Poblachta*, and in 1947 was elected to the Dáil at a Dublin by-election. In the general election of 1948 his party secured 10 seats, and he was appointed minister for external affairs in Costello's coalition govt.

**McCabe, JOSEPH** (b. 1867). British author. Born Nov. 11, 1867, he was educated at S. Francis's College, Manchester; S. Anthony's, Forest Gate, London; and Louvain university. He became a Franciscan monk in 1883, a priest in 1890, and rector of Buckingham College in 1895. Leaving the Church in 1896, he earned distinction as a rationalist author and lecturer. He wrote *Twelve Years in a Monastery*, 1897; *Modern Rationalism*, 1897; *The Twilight of the Gods*, 1923; *The Splendour of Moorish Spain*, 1935; *History of the Popes*, 1939; *Testament of Christian Civilization*, 1947.

**Maccabees**. Later name of the Hasmonaeans or Asmonaeans, an illustrious Jewish family. In the latter part of the 2nd century B.C. they overthrew Syro-Hellenic tyranny and established a race of priest-kings. Their story begins with Mattathias, an aged priest, who, when ordered to offer sacrifice to the pagan deities at Modin, near Jerusalem, killed the Syrian commissioner, slew a Jew who was about to obey the order, and, with his five sons—John, Simon, Judas, Eleazar, and Jonathan—fled to the mountains. Thus began the successful revolt against the attempt of Antiochus Epiphanes to wipe out Jewish religion and Jewish customs.

After the death of Mattathias, he was succeeded by Judas, the greatest of the brothers, who was called Makkabi or Maccabaeus (Heb. *maggabah*, hammer), Jonathan, and Simon. The race, which gradually degenerated, ended with Mariamne, by whose marriage with Herod (*q.v.*) the dynasty passed to the Idumaeans line of the Herodians. The history of the family is tragic as well as

heroic, the climax of tragedy being reached when Herod murdered Mariamne and their two sons.

*Die Makkabäer* (The Maccabees) is the title of an opera by Rubinstein, 1875. See Gezer; Hyrcanus; Jews; Judas Maccabaeus.

**Maccabees, BOOKS OF**. Four books of the O.T. Apocrypha. Of these 1 and 2 Maccabees, especially the former, are valuable historical works. 1 Maccabees covers the period of Jewish history from the accession of Antiochus Epiphanes to the death of Simon (175–135 B.C.), i.e. the period in which Judas and his brothers waged their struggle for liberty. 1 Maccabees was written originally in Hebrew or Aramaic by a Palestinian Jew between about 100 and 80 B.C. 2 Maccabees covers part of the same ground (174–161 B.C.), but is of less historical value. The author explains that he wishes to delight and profit his readers, and his book has been described (H. T. Andrews, *The Apocryphal Books*) as a tract in favour of unity based on the events of the Maccabean war. The work seems to have been written by an Alexandrian Jew between 60 B.C. and A.D. 1.

3 Maccabees is of the nature of an historical romance, and is not really concerned with the Maccabean age at all. The scenes of the story are Jerusalem and Alexandria in the reign of Ptolemy IV Philopator (222–204 B.C.). The author seems to have been an Alexandrian Jew, but his date is uncertain: 4 Maccabees is philosophical, in the Stoic sense, rather than historical, and is not really Maccabean. It is a homily, sermon, or lecture addressed to the Jews. The author seems to have been a Hellenistic Jew, who wrote immediately before or after the beginning of the Christian era. 1 and 2 Maccabees are regarded as canonical by the R.C. Church. See Apocrypha.

**McCallum, Sir Henry Edward** (1852–1919). British soldier and administrator. Born Oct. 28, 1852, he became private secretary to Sir William Jervois, governor of the States Settlements, in 1874. He was colonial engineer, Penang, 1880, and surveyor-general of the Straits Settlements in 1884. He was governor of Lagos, 1897; of Newfoundland, 1898; of Natal, 1901; and of Ceylon, 1907, resigning in 1912. He was knighted in 1898, and died Nov. 24, 1919.

**Maccalube, LE.** Name given by Sicilians to mud volcanoes, particularly to that situated 4 m. W. of Aragona, near Agrigento.

This hill, 135 ft. high, is formed of limestone and clay, and is studded with small cones, 18 ins. to 36 ins. high, filled with mud and emitting sulphuretted hydrogen.

**McCardie, Sir Henry Alfred** (1869-1933). A British lawyer. Born at Edgbaston, July 18, 1869, he was called to the Bar by the Middle Temple in 1894. In October 1916, he was appointed a judge of the King's Bench division without having taken silk. His outspoken and unorthodox comments on the sociological aspects of his cases attracted much attention and criticism. Among his cases were the libel action brought by Sir Michael O'Dwyer against Sir Sankaran Nair arising out of the Amritsar incident; the murder trials of Henry Jacoby and Ronald True; and the *Place v. Searle* case in 1932, which brought him into conflict with Lord Justice Scrutton. He shot himself after an attack of influenza, Apr. 27, 1933. *Consult Life*, G. Pollock, 1934.

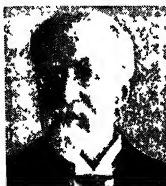
**MacCarthy, Desmond** (b. 1877). British literary critic. Born at Plymouth, he was educated at Eton, and Trinity College, Cambridge.



Desmond MacCarthy,  
British writer

He became dramatic critic to *The Speaker* in 1904, edited *The New Quarterly*, 1907-10, and founded and edited *Life and Letters*, resigning his editorship in 1932. One of the foremost literary critics of his day, he regularly contributed to *The New Statesman* and *The Sunday Times*. His publications included *The Court Theatre*, 1907; *Remnants*, 1918; *Portraits*, 1931; *Criticism*, 1932; *Experience*, 1935; *Drama*, 1940. He published a biography of Leslie Stephen in 1937.

**McCarthy, Justin** (1830-1912). Irish author and politician. Born in Cork, Nov. 22, 1830, he early became a reporter on the *Cork Examiner*. In 1853 he joined the staff of *The Northern Daily Post* at Liverpool. In 1855 he married Charlotte, daughter of W. G. All-



Justin McCarthy  
Elliott & Fry

man (d. 1879). His first contribution to the London press was an article on Goethe's ballads in *The London Quarterly Review*. In 1860 he became gallery reporter, in 1861 foreign editor, and during 1864-68 was editor of *The Morning Star*. He then spent three years in the U.S.A. Political writer on *The Daily News*, 1872-97, he was a member of parliament from 1879 to 1900, and chairman of the Irish Parliamentary Party, Nov., 1890-Jan., 1896. In politics a Home Ruler, he lost health and wealth in the political struggles of his time. He died April 24, 1912.

His literary work includes *Lives of Sir Robert Peel*, 1891; *Leo XIII*, 1896; and *Gladstone*, 1898; *A History of Our Own Times*, 1879-97 and 1905; *A History of the Four Georges and William IV*, 1884-1901; *Reign of Queen Anne*, 1902; *Portraits of the 'Sixties*, 1903; *The Story of an Irishman*, 1904; *Reminiscences*, 1899; and several novels.

**McCarthy, Justin Huntly** (1860-1936). Irish author and politician. The son of Justin

McCarthy (v.s.), he was educated at University College School and University College. A contributor to newspapers and magazines, his books include *A History of England under Gladstone*, 1884; *An Outline of Irish History*, 1883; translations of Hafiz, Omar Khayyám, and the *Arabian Nights*; several plays, including *The Candidate*, 1884; *My Friend the Prince*, 1897; and *If I Were King*, 1901; and a number of novels. He sat in the house of commons as a Nationalist, 1884-92. He died March 20, 1936.

**McCarthy, Lillah** (b. 1875). British actress. Born at Cheltenham, Sept. 22, 1875, she was educated there, and made her first appearance on the stage in 1895. The following year she made her London debut in *The Sign of the Cross*. Her greatest successes were achieved in Shakespearean drama, and in the plays of Barrie, Galsworthy, and Shaw. She created the part of Ann Whitfield in *Man and Superman* (q.v.), 1905, and played in Granville-Barker's productions of *Twelfth Night*, and *A Winter's Tale*, 1912. After appearing with Matheson Lang in *The Wandering*



J. H. McCarthy,  
Irish author

*Jew*, and *Blood and Sand*, 1921, she retired from the stage for over 10 years, reappearing for a single performance of *Iphigenia in Tauris*, 1932. She published *My Life* (autobiography), 1930, and *Myself and My Friends*, 1933. She married, 1920, Sir Frederick Keeble.



Lillah McCarthy,  
British actress

**McCay, Sir James Whiteside** (1864-1930). Irish-born Australian politician and soldier. Born at Ballynure, Antrim, Dec. 21, 1864, he was educated at Melbourne university, and became a barrister. He entered the house of representatives of the Commonwealth parliament in 1901 and was minister for defence, 1904-05. In the First Great War he commanded the 2nd Australian infantry brigade in Gallipoli, 1915, and the 5th division in Egypt and France. Later he was in command of the Australian forces in Great Britain and, during 1920-22, business adviser to the Commonwealth government. Created K.C.M.G. in 1918, he died Oct. 1, 1930.

**Macchi**. Italian aircraft manufacturers, notable since the First Great War. Macchi were the designers of the racing seaplanes that won the Schneider trophy in 1921 and 1926 and set up world's speed records culminating in Agello's 440 m.p.h. in 1934. In the Second Great War, the Macchi C.200 and subsequent developments were the outstanding fighter aircraft of the Italian air force.

**McClellan, George Brinton** (1826-85). An American soldier, military writer, and politician.

Born at Philadelphia, Dec. 3, 1826, he was commissioned from West Point in 1846. He served as a lieutenant in the Mexican War, and was promoted captain for his services.

After the war he was an instructor at West Point, and leaving in 1855, was sent to Europe to study European military affairs. He published *Armies of Europe*, 1856, resigned from the army in 1857, and took up railway work. On the outbreak of the civil war he was made major-general of militia in April, 1861, but was almost im-



G. B. McClellan,  
American soldier



mediately promoted to regular major-general. He dispersed the Confederates at Philippi in June. After the first defeat of Bull Run he was made commander-in-chief of the Federal armies, Nov., 1861.

During the winter 1861-62 he did good work in organizing the army of the Potomac, but his plan for the spring campaign did not meet with approval. He was allowed to carry it out, but relieved of the supreme command. On Pope's defeat at Centerville, McClellan was reinstated and sent to oppose Lee's advance into Maryland in Sept. He defeated Lee at the battle of Antietam, but Lincoln, still distrusting him, adjudged his pursuit lacking in vigour, and replaced him by Burnside. He never commanded again.

At the presidential election of 1864 McClellan appeared as a candidate, putting forward the policy of negotiating with the Confederates, but was badly defeated, and went to Europe until 1868. After his return, he wrote much. He died at Orange, Oct. 29, 1885. He was a brilliant writer and speaker, a good organizer, and not without military genius; but he was too kind-hearted for a great leader, and lacked the tact to make him a successful politician. *Consult* Gen. McClellan, P. S. Mickie, 1901.

**Macclesfield.** Mun. borough and market town of Cheshire, England. It stands on the little river Bollin, 18 m. S. of Manchester and 166 m. from London, with which it has rly. connexion. The chief church is S. Michael's, largely rebuilt in the 18th century and restored in 1900; it has two old chapels and other objects of interest. The town has a town hall, infirmary, and public library. The grammar school dates from the 16th century. West Park and Victoria Park are public recreation grounds; in the former are the old market cross and the stocks. Macclesfield gives its name to a county constituency. The chief industry is silk manufacture; others are cotton-spinning and the making-up trade. The chief suburb is Sutton.

Macclesfield became a corporate town in the 13th century, but was probably important earlier. It had walls in the Middle Ages. During 1832-85 it sent two members to parliament. Its earlier industry was the manufacture of buttons,

introduced in the 16th century. The first silk mill was built about 1750. The town has fairs and markets, May Fair lasting a week. Barnaby holidays are held for a week from June 20. The wild moorland district on the Derbyshire border is called Macclesfield forest. The Macclesfield Canal joins a canal at Marple with the Grand Union Canal at Lawton. It is 29½ m. long. Market days, Tues. and Sat. Pop. 34,902.

**Macclesfield, EARL OF.** English title borne by the families of Gerard and Parker, the latter still holding it. Charles Gerard (c. 1620-94) belonged to a Lancashire family and fought for Charles I during the Civil War. In 1645 he was made a baron, and during the Commonwealth was in France, being one of the intimates of Charles II. On that king's restoration he was rewarded richly for his loyalty, and



Macclesfield, Cheshire. Tower and west front of the parish church of S. Michael Frith

in 1679 was made earl of Macclesfield. His fall from favour was due to his friendship with Monmouth; but he won the favour of William of Orange, whose supporter he remained until his death in 1694. His son, Charles, the 2nd earl, was sentenced to death for conspiracy, but was pardoned in 1687. The title lapsed in 1702.

A successful lawyer, Thomas Parker (c. 1666-1732), was the founder of the present line of earls. He became lord chief justice and then lord chancellor, being made a baron in 1716 and an earl in 1721. Later he was impeached for corruption and was fined £30,000. The chief seat of the family is Shirburn Castle, Oxfordshire. The earl's eldest son is called Viscount Parker.

**McClintock, SIR FRANCIS LEOPOLD** (1819-1907). British Arctic explorer. Born at Dundalk, July 8,



Sir F. L. McClintock, British explorer

1819, he entered the navy in 1831. Appointed to the Arctic expedition under Sir James Ross in 1848, he was in 1850 first lieutenant of the *Assistance*, sent for the relief of Sir John Franklin. Promoted commander on his return, in 1852 he commanded the *Intrepid* in Belcher's Arctic expedition. In 1857 he was given command of the *Fox*, fitted out by Lady Franklin, and sailed on another expedition in search of Sir John. In the N.W. of King William's Land he discovered convincing proofs of Franklin's death. Returning in 1859, he was knighted. Rear-admiral in 1871 and vice-admiral in 1877, he was in command of the North American and West Indian stations (1879-82), and became admiral in 1884. He died Nov. 17, 1907. He published an account of the discovery of Franklin's remains in *Voyage of the Fox in Arctic Seas*, 1859. *Consult* Life, C. R. Markham, 1909.

**McClintock Channel.** Strait in the Arctic Ocean, between Prince of Wales Island and Victoria Island, British N. America. Through Melville Sound and Banks Strait, to the N.W., it communicates with Beaufort Sea.

**McClure, SIR JOHN DAVID** (1860-1922). British educationist. Born at Wigan, Feb. 9, 1860, and educated at Owens College, Manchester, and Trinity College, Cambridge, in 1891 he was appointed headmaster of Mill Hill school, which he brought into the front rank. He was knighted in 1913, and died Feb. 19, 1922.

**McClure, SIR ROBERT JOHN LE MESURIER** (1807-73). A British Arctic explorer. Born at Wexford, Ireland, Jan. 28, 1807, he studied at Eton and Sandhurst and entered the navy in 1824. In 1848 he accompanied Sir James Ross's expedition in search of Sir John Franklin,



Sir R. J. McClure, British Arctic explorer

was promoted commander on his return in 1849, and in 1850 commanded the *Investigator* on an

Arctic voyage undertaken by way of Bering Strait. He explored Banks Land, spent two years (1851-53) on the ice, and after many vicissitudes was rescued by the *Resolute* and returned to England in 1854. He was knighted and promoted captain upon his return, and was voted £10,000 by the house of commons for having discovered and successfully negotiated a North-West Passage. He was promoted rear-admiral in 1867 and retired as vice-admiral in 1873, dying Oct. 17 of the same year.

**M'Clure, SAMUEL SIDNEY** (1857-1949). U.S. editor and publisher. Born at Frossess, An-

trim, Feb. 17, 1857, of Scottish - French parentage, he was taken at the age of nine to Indiana by his widowed mother. He worked his way through Galesburg College,



S. S. M'Clure,  
American editor

Illinois. Editor and manager of *The Wheelman*, Boston, Mass., 1882-83, he was associated with the *De Vinne Company*, New York, 1883-84, and in 1884 established the first newspaper syndicate in the U.S.A. In June, 1893, he founded *M'Clure's Magazine*, which he edited. By publishing *Ida Tarbell's* investigation of the *Standard Oil Co.*, *M'Clure's Magazine* started the "muckraking" reform movement in American public life. The rapid increase of its sales to 250,000 a month involved *M'Clure* in heavy debt as advertisement rates on the magazine had been based on an estimated circulation of 40,000. He published his autobiography in 1914. Among his other books was *The Achievements of Liberty*, 1935. He died March 22, 1949.

**MacColl, DUGALD SUTHERLAND** (1859-1948). Scottish art critic and artist. Born March 10, 1859, he was educated at *University College, Oxford*. He studied art at the *Westminster School of Art* and the *Slade school*, and was successively art critic of *The Spectator* and *The Saturday Review*, editor of *The Architectural Review*, and lecturer on the history of art at *University College, London*. He was keeper of the *Tate Gallery* 1906-11, then until 1924 director of the *Wallace Collection*. He was awarded the *James Tait Black memorial prize* in 1945 for his book on *Wilson Steer*. He died Dec. 21, 1948.

**MacColl, MALCOLM** (1838-1907). British cleric. Born at *Glenfinnan, Inverness-shire*, he was educated at *Trinity College, Glensalmond*, and in *Naples*. Ordained, 1859, he became rector of *S. George's, City of London*. He was canon residentiary of *Ripon* from 1884 to 1907, and died April 5 of the latter year. He was an intimate friend of *Gladstone*.

**McCormack, JOHN** (1884-1945). Irish-born American singer. Born at *Athlone*, June 14, 1884, he studied under *Sabbatini* at *Milan*, and first appeared as a concert singer in 1907. He made his debut the same year at *Covent Garden* in *Cavalleria Rusticana*, and was chosen by *Weingartner* to sing the part of *Don Ottavio* in *Don Giovanni* at the *Salzburg festival*. His success there established him as one of the foremost tenors of the day. Associated with *Tetrazzini (q.v.)* in many operatic performances, he also appeared with *Melba* in *La Bohème*. He made his debut in the U.S.A., 1910, later joining



John McCormack,  
American singer

**McCormick, CYRUS HALL** (1809-1884). American inventor. He was born at *Walnut Grove, West Virginia*, Feb. 15, 1809, the son of a farmer. He invented a grain-cutting machine in 1831, and later set up at *Chicago* a factory for large-scale manufacture of mechanical harvesters. He died May 13, 1884.

**McCormick, ROBERT RUTHERFORD** (b. 1880). American newspaper proprietor. He was born in *Chicago, Ill.*, on July 30, 1880, and graduated from *Yale university* in 1903. After studying law at *Northwestern university* he was admitted to the *Illinois bar* in 1907. In 1910 he became associated with his cousin, *Joseph Medill Patterson*, as co-editor and publisher of the *Chicago Tribune*, being president of the *Chicago Tribune Co.* Under their able direction the *Tribune* enormously increased its circulation and advertising, becoming one of the most influential newspapers of the *Middle West*.

It was staunchly Republican and consistently anti-British. After service in the *First Great War*, *McCormick* and his cousin started the illustrated *Daily News* in *New York* in 1921. *McCormick* used his military title and was commonly known as *Colonel McCormick*.

**McCormick, WILLIAM PATRICK GLYN** (1877-1940). British ecclesiastic. Born at *Hull*, June 14, 1877, he was educated at *Llandaff cathedral school, Exeter school*, and *S. John's College, Cambridge*. Ordained in 1900, he was curate of *All Saints, Shooter's Hill*, then became acting chaplain to the forces in *S. Africa*, where he was appointed vicar of *S. Patrick's, Johannesburg*. After serving in the *First Great War* (he was awarded *D.S.O.* in 1917) he became vicar of *Croydon*, 1919, and succeeded *H. R. L. (Dick) Sheppard* as vicar of *S. Martin-in-the-Fields* in 1927. "Pat" *McCormick* was a popular preacher and broadcaster. He died Oct. 17, 1940. His publications included *Be of Good Cheer*, 1930; *Starting Afresh*, 1939.



Rev. Pat McCormick,  
British ecclesiastic

**McCosh, JAMES** (1811-94). Scottish-American philosopher and educationist. He was born at *Carskeoch, Ayrshire*, April 1, 1811, and educated at *Glasgow* and *Edinburgh universities*. The publication of his *Method of the Divine Government*, 1850, secured him the professorship of logic and metaphysics at *Belfast*. Going to *America*, he was president of the college at *Princeton*, 1868-87, where he died Nov. 16, 1894. His chief works are: *The Intuitions of the Mind*, 1860; *The Scottish Philosophy*, 1874; *The Realistic Philosophy*, 1887.

**McCracken, ESTHER HELEN** (b. 1902). British playwright, *née Armstrong*, now *Mrs. M. Campbell*. Born July 25, 1902, she spent eight years with the repertory company in *Newcastle-on-Tyne*. Her first comedy, *Quiet Wedding* (*Wyndham's Theatre, London*, 1938), achieved outstanding success, a screen version appearing in 1941. A sequel, *Quiet Weekend*, came on at the same theatre in 1941. No Medals, 1944, was a comedy of the "home front" in wartime, and *Cry Liberty*, 1950, a forthright satire on bureaucracy.

**McCracken, Sir Frederick William Nicholas** (b. 1859). British soldier. Born Aug. 18, 1859, he was educated at Sandhurst, and joined the 49th Foot in 1879. He was adjutant of the 1st Berks Regiment, 1883-85, and served in Egypt, Suakin, and on the Egyptian frontier before he gained the D.S.O. in the S. African War. He commanded the 7th infantry brigade, 1912-14, the 15th Scottish division, 1915, and an army corps, 1917-18. He held the Scottish command in 1918-19. Knighted in 1917, he was then promoted lieutenant-general.

**McCreery, Sir Richard London** (b. 1898). A British soldier. He was born Feb. 1, 1898, and educated at Eton and Sandhurst. He served in France during the First Great War, commanded the 12th Lancers, 1935-38, and was promoted major-general in 1943 and lieutenant-general in 1944. Chief of staff to Alexander in the Middle East 1942-43, he commanded the 10th corps in Italy at Salerno and during the long difficult advance to Cassino; he also planned and executed the crossing, and the simultaneous landing N. of the Garigliano in Jan., 1944. He was appointed to command the 8th army, in succession to Sir Oliver Leese, Nov., 1944. He was G.O.C.-in-C., British forces in Austria from July, 1945, until in March, 1946, he was appointed to command the B.A.O.R. From 1948 he was British Army representative on the U.N. military staff committee. McCreery was created K.C.B. in 1943.

**McCudden, James Byford** (d. 1918). British airman. He went to France at the start of the First Great War as a mechanic attached to the R.F.C. He gained the M.M. in Sept., 1916. Soon afterwards commissioned, he won the M.C. and bar, D.S.O. and bar, and in March, 1918, the V.C. Up to that month McCudden, who had reached the rank of major, had accounted for 54 enemy planes (42 definitely destroyed). He was flying to France to take command of a squadron when he was killed, July 8.



Derek McCulloch,  
British broadcaster  
and writer

**McCulloch, Derek Ivor Breasbur** (b. 1897). British broadcaster and writer. Born at Plymouth, Nov. 18, 1897, he was educated at Croydon high school, and served in the First Great War

in the infantry and R.F.C. He joined the B.B.C. as an announcer, became popular as "Uncle Mac" of the Children's Hour, and in 1933 was placed in charge of that programme. He also published several books, including *Gardening Guyed*, 1931; *Travellers Three*, 1936; *Cornish Adventure*, 1937. Severely wounded in the First Great War, losing the sight of one eye, he also lost a leg as the result of a road accident in 1938.

**McCulloch, John Ramsay** (1789-1864). A British economist. Born March 1, 1789, at Whithorn, Wigtownshire, he was educated in Edinburgh and became a lawyer's clerk there. In 1817 he became associated with The Scotsman, and soon made a reputation as a writer and lecturer on economics. During 1828-32 he was professor of political economy in the university of London; then comptroller of the stationery office from 1838 until his death, Nov. 11, 1864. His books include *A Dictionary of Commerce and Commercial Navigation*, 1832; *Statistical Account of the British Empire*, 1837; *Literature of Political Economy*, 1845. He edited *Smith's Wealth of Nations*, 1828, and *Ricardo's Works*, 1846.

**MacCunn, Hamish** (1868-1916). British composer. Born at Greenock, March 22, 1868, he was



Hamish MacCunn,  
British composer  
Elliott & Fry

trained at the Royal College of Music, London, and was professor of harmony at the Royal Academy of Music, 1888-94. His overture, *Land of the Mountain and the Flood*, performed at the Crystal Palace in 1887, first brought him into notice, and he followed it up with a succession of works, the chief being the cantatas *Lord Ullin's Daughter* and *The Lay of the Last Minstrel*, and the operas *Jeanie Deans* and *Diarmid*. He died Aug. 2, 1916.

**MacDiarmid, Hugh** (b. 1892). Scottish poet and writer. Christopher Murray Grieve was born at Langholm, Dumfriesshire, Aug. 11, 1892, and educated at Edinburgh university. A champion of dialect, he was a founder of the Scottish centre of the P.E.N. club and of the Scottish Nationalist political party. His volumes of poetry include *Sangschaw*; *Stony Limits*; *Hymns to Lenin*; *The Birlinn of Clanranald* (from the Gaelic). In prose he wrote on the con-

temporary social and political scene in Scotland. In 1950 he was granted a civil list pension of £150 per year. *Lucky Poet*, an autobiography, appeared in 1943.

**Macdona, Charles** (1860-1946). Irish theatrical manager. Born in Dublin, he made his first appearance on the stage at Edinburgh in 1884 and his London debut in 1887. In 1921 he formed his own company, The Macdona Players, who became celebrated for their performances of Bernard Shaw's plays. He presented revivals of *Diplomacy* and *The Wandering Jew*, produced *On the Rocks* at the Cambridge Theatre in 1934, and appeared as Polonius in *Hamlet*. He died Nov. 15, 1946.

**Macdonald**. Oldest of the Scottish clans. It is said to be of Pictish origin and have been founded by a descendant of Somerled of the Isles (Gaelic, *Somhairle*, i.e. Samuel), who became powerful as thane of Argyll in the 12th century. By his marriage to a daughter of Olave the Swarthy, king of Man and the Isles, he added the heritage of the last-named to his own possessions. He was slain in battle at Renfrew in 1164, and left four sons. The clan has included the MacDonalds of the Isles and Sleat, Clanranald, Glengarry, Keppoch, Staffa, and the MacIans of Glencoe. MacDonell is a variant.

**Macdonald, Sir Claude Maxwell** (1852-1915). British soldier and diplomatist. Born June 12, 1852, and educated at Up-pingham and Sandhurst, he entered the 74th Highlanders in 1872. Ten years later he went to Cairo as military attaché, and saw some fighting.



Sir Claude M. Macdonald, British soldier  
Elliott & Fry

In 1887 he was acting agent and consul-general at Zanzibar, and as commissioner in S. Nigeria in 1891 took part in the Brass River expedition. In 1896 he went to Peking as envoy extraordinary and plenipotentiary, remaining in that capacity until the Boxer rising and the siege of the legations, June-Aug., 1900, when he commanded the defence. For this he received the K.C.B., and was soon afterwards appointed ambassador at Tokyo, remaining until 1912. He died Sept. 10, 1915.

**Macdonald, Etienne Jacques** Joseph Alexandre (1765-1840). French soldier. Born at Sedan,



Macdonald,  
Duke of Taranto,  
French soldier  
After David

Nov. 17, 1765, he belonged to a Jacobite family exiled in the cause of James II. He entered an Irish regiment in the service of France, but in 1789 left this to join the revolutionary army. By 1796 he was commanding a division. In 1797 he was made governor of Rome.

Macdonald later served in Switzerland, and in 1809 was given a command in Italy. For his considerable share in the victory of Wagram he was made a marshal, and created duke of Taranto. He served in Spain, was very prominent in Napoleon's concluding battles, and in 1814 went over to the Bourbons. He died Sept. 7, 1840.

**Macdonald, FLORA** (1722-90). Scottish Jacobite heroine. She lost her parents early, and was brought up by relatives, the Clanranald family, being adopted later by Lady Macdonald of Skye. In 1746 she assisted in the escape of Prince Charles Edward after Culloden, for which she was arrested and sent to London, where she was detained but kindly treated. When released under the Act of Indemnity in 1747 she was presented with £1,500 by her admirers. In 1750 she married Allan Macdonald of Kingsburgh, emigrating with him to N. Carolina in 1773. During the War of American Independence Allan was made brigadier-general in the British forces, and Flora accompanied him on service until he was taken prisoner of war. By his advice she returned to Scotland, 1779. She died at Kingsburgh, March 5, 1790. See Culloden; *consult* Life and Times of Prince Charles Edward, A. C. Ewald, 1886; *Life of Flora Macdonald*, A. MacGregor, 1901.



Flora Macdonald,  
Jacobite heroine  
Portrait by  
A. Ramsay

**MacDonald, GEORGE** (1824-1905). Scottish novelist and poet. Born at Huntly, Aberdeenshire, the Howglen and Rothieden of his novels, Dec. 10, 1824, he was educated at King's College, Aberdeen, and Aberdeen University. He was a Congregational minister at Arundel from 1850 to 1853, but retired in the latter year and devoted himself to literature, frequently, however, occupying pulpits as a lay preacher. He edited *Good Words for the Young*, 1870-72, received a civil list pension of £100 in 1877, and died at Ashstead, Surrey, Sept. 18, 1905.

A voluminous writer, whose style expressed a charming personality, his first work, *Poems and Essays*, was published anonymously in 1851. *Phantastes*, a Faerie Romance in prose, 1858, was the first of his works to attract general notice. His poetical output consisted of two large volumes, 1893. Ruskin declared his *Diary of an Old Soul* to be one of the three great religious poems of the 19th century. He was the author of the well-known *Where Did You Come From, Baby Dear?* and *That Holy Thing*. His story books for children include *Ranald Bannerman's Boyhood*, 1871, *At the Back of the North Wind*, 1871, and *The Princess and the Goblin*, 1872. Of his novels, some are of a spiritual and mystical character, such as *David Elginbrod*, 1862; others, such as *Alec Forbes of Howglen*, 1865, are notable for their presentation of Scottish life and character. *Consult* Life, J. Johnson, 1906; anthology, ed. C. S. Lewis, 1945.

**Macdonald, SIR HECTOR ARCHIBALD** (1853-1903). Scottish soldier. Born at Rootfield, Urquhart, April 13, 1853, of humble parentage, he was assistant in a draper's shop for a few years, and in 1870 enlisted in the Gordon Highlanders, so distinguishing himself in the second Afghan War (1879-80) that he was recommended for a commission by Lord Roberts. His great qualities as a soldier had already earned for him the nickname of *Fighting Mac*. In 1883 he joined the Egyptian constabulary, was subsequently transferred to the Egyptian army, and became noted for his skill in training native troops. The Egyptian brigade which he commanded at the battle of Omdurman, 1898, was chiefly responsible for the victory.



Sir Hector Macdonald,  
Scottish soldier  
Lafayette



James MacDonald  
Elliott & Fry

In 1899 Macdonald was sent to South Africa to take command of the Highland brigade. In May, 1902, he was given the command of the troops in Ceylon, but in the following year a grave charge was brought against him. He returned to London, but was ordered by the war office to submit himself to a court of inquiry in Ceylon, and on his way thither shot himself in Paris, March 25, 1903. There is a memorial tower at Dingwall, Ross-shire, completed 1907. During the First Great War there were absurd rumours that Macdonald, still alive, held a German command.

**MacDonald, JAMES RAMSAY** (1866-1937). British statesman. Born at Lossiemouth, Morayshire, Oct. 12, 1866, he was educated at the village school there. He went to London in 1884 intending to study for the teaching profession, maintaining himself meanwhile as a clerk. Becoming private secretary to an Irish politician, he also began to make his way as a journalist. He joined the Independent Labour Party in 1894, and unsuccessfully contested Leicester in the election of 1895. It was largely through his efforts that the trade unions agreed to collaborate in the I.L.P., a move which led to the formation of the Labour party in 1900. MacDonald, as secretary, drafted its constitution.

He was again defeated in the 1900 election, but was returned in 1906, becoming leader of the party in 1911. Opposing Great Britain's entry into the First Great War, against the majority of his party, in 1917 he publicly supported a revolutionary movement on Russian lines; as a result the National Seamen's and Firemen's union refused to allow him to sail when he wanted to visit Russia. He was also unable to attend an international peace meeting at Stockholm, as a passport was refused. His resulting unpopularity cost him his parliamentary seat in 1918, and he did not return until 1922, as M.P. for Aberavon. By this time his firm opposition to the Communists had restored his popularity within the party, of which he resumed his leadership, thus giving him also the leadership of the opposition. As a result of the 1923 election, he became, with Liberal support, the first Labour prime minister (Jan.



J. Ramsay MacDonald,  
British statesman

MacDonald, GEORGE (1824-1905). Scottish novelist and poet. Born at Huntly, Aberdeenshire, the Howglen and Rothieden of his novels, Dec. 10, 1824, he was educated at King's College, Aberdeen, and Aberdeen University. He was a Congregational minister at Arundel from 1850 to 1853, but retired in the latter year and devoted himself to literature, frequently, however, occupying pulpits as a lay preacher. He edited *Good Words for the Young*, 1870-72, received a civil list pension of £100 in 1877, and died at Ashstead, Surrey, Sept. 18, 1905.

1924), taking over the foreign secretaryship as well. His ministry was short-lived, as he was defeated in Oct. on an opposition motion calling for an inquiry into the dropping of a charge of sedition against a communist pamphleteer. MacDonald narrowly retained his seat in the subsequent election, in which the Conservatives were returned to power.

In 1929 he was elected M.P. for Seaham Harbour, and again became premier, though again of a minority government. The rise of unemployment, together with the decline of trade, forced MacDonald in 1931 to put before his colleagues drastic measures of retrenchment, based on the findings of the May committee. These, especially the proposal for an unemployment "means test" (*q.v.*), were unacceptable to the majority of the cabinet, who refused their support. MacDonald found the Conservatives and most Liberals ready to support an all-party government, which he formed in Aug., 1931, though the number of his Labour supporters (henceforward called National Labour) was very small. A general election in Oct. returned this "National" government with a huge majority, but the new house was predominantly Conservative and MacDonald's position was therefore somewhat anomalous. The opposition of Labour members was particularly fierce towards the man they accused of "selling the pass."

After a visit to Washington to discuss the British debt to the U.S.A., he showed many signs of overstrain. His speeches became noticeably more vague and evasive. It was at this period that Winston Churchill termed him "the boneless wonder." This overstrain, coupled with eye trouble, led MacDonald to resign the premiership to Baldwin in 1935, in exchange for the office of lord president of the council. A big shock followed in the 1935 election, when he lost his seat by 20,000 votes. He remained in office, however, and was elected in Feb., 1936, for the Scottish universities. In May, 1937, he resigned from office, and later set out for South America, but died on the voyage, Nov. 9, 1937.

At his best, MacDonald was a persuasive orator and a prolific political writer. His tenure of the foreign secretaryship in 1923 was considered generally successful. It fell to him to set many precedents on the first advent of Labour to government, and this he contrived to do with appreciable tact and

dignity. His wife, Margaret Ethel Gladstone (d. 1911), whom he married 1896, profoundly influenced his career. A pleasing memorial to her stands in Lincoln's Inn Fields. *See* Independent Labour Party; Labour Party. *Consult* Lives, H. A. Tiltman, 1929; M. A. Hamilton, 1931; L. M. Weir, 1938; Lord Elton, 1939.

**MacDonald, JEANETTE** (b. 1907). American film actress and singer. Of Scottish-Irish descent, she was born at Philadelphia, June 18, 1907, educated there, and made her debut on the stage in revue, when a child. Her powerful soprano voice attracted attention, and she made a success in the New York production of *Irene*, 1920. She entered films under the auspices of Lubitsch who directed *The Love Parade*, 1929, in which she played opposite Maurice Chevalier. She scored success in a series of musical films, in which she played opposite Nelson Eddy, *e.g.* *Rose Marie*, 1936; *Bitter-Sweet*, 1941. Other films included *San Francisco*, 1937; *Smilin' Through*, 1942; *Cairo*, 1943, and *Three Dancing Daughters*, 1948.

**Macdonald, SIR JOHN ALEXANDER** (1815-91). Canadian statesman. Born in Glasgow, Jan. 11, 1815, he went as a child to Canada, where he was called to the bar in 1836, and in 1844 became a member of the legislature. He was attached to the Conservative party. In 1847 he joined the government as receiver-general, and after six years in opposition was attorney-general of Upper Canada from 1854 to 1857, when he became prime minister of the two Canadas.

Canada was passing through a critical stage, and Macdonald's solution of the many difficulties was federation of the various provinces. When in 1867 the federation was accomplished, Macdonald was knighted and became the first prime minister of the new union.

From 1867 to 1874 he was prime minister, and he returned to power in 1878, remaining premier until his death, May 29, 1891. He was also influential in promoting the building of the Canadian Pacific Rly. A supreme manager of men and groups of men with contending interests, he did much to develop the resources of the north-west, and throughout his career upheld the connexion with Britain.



Sir John Macdonald, Canadian statesman

**MacDonald, MALCOLM** (b. 1901). British politician and administrator. Younger son of J. R. MacDonald (*q.v.*), he



Malcolm MacDonald, Scottish politician and administrator

was born at Lossiemouth, Morayshire, and educated at Bedales school, and Queen's College, Oxford. He entered parliament in 1929 as the Labour member for Bassetlaw, and was parliamentary under-secretary, dominions office, 1931-35, becoming a privy councillor in 1935. He was dominions secretary in 1938 and was appointed minister of health in 1940. He went to Canada in 1941 as U.K. high commissioner, and was, 1946-48, first governor-general of the Federation of Malaya and Singapore. In 1948 he became U.K. commissioner-general in S.E. Asia. On the death of his father he became leader of the small National Labour party; but he did not stand for re-election in 1945.

**Macdonald, SIR WILLIAM CHRISTOPHER** (1831-1917). Canadian philanthropist. Born at Glenaladale, Prince Edward I., the son of a president of the legislative assembly of the island, he made his fortune in Montreal in the tobacco business. He devoted large sums to the promotion of education, founding the Macdonald agricultural college at Ste. Anne de Bellevue, Quebec, at a cost of about £1,000,000, and making munificent donations to McGill university, Montreal, and the Ontario agricultural college. He was knighted in 1898, and died June 11, 1917.



Sir W. C. Macdonald, Canadian philanthropist

**Macdonell, ALESTAIR** (c. 1725-61). Scottish Jacobite. The thirteenth chief of Glengarry, he

became an officer in the Royal Scots Regiment, then in the service of France. In 1744 he went to Scotland on a Jacobite mission, and in the following year was captured



Alestair Macdonell, Scottish Jacobite



at sea while bringing assistance to Prince Charles Edward, then in Scotland. Some time after his release he appears to have acted as a spy upon the prince, signing his dispatches to the English Government with the sobriquet of "Pickle," a name which Andrew Lang made familiar by his book *Pickle the Spy*. He kept closely in touch with the Jacobite party on the Continent and betrayed many of its members, but never seems to have been suspected. He succeeded to the Macdonell estates in 1754, and died Dec. 23, 1761.

**Macdonnell, ARCHIBALD GORDON** (1895-1941). British writer. Born Nov. 3, 1895, and educated at Winchester, he became one of the leaders of the younger school of satirical writers, his best-known work being *England Their England*, 1933, in which the incongruous and scholarly appreciations were delightfully mingled. Napoleon and His Marshals, a serious historical study, was a notable early work. His other books included *A Visit to America*, 1935; *Lords and Masters*, 1936. A frequent broadcaster in the B.B.C. Empire service, he died at Oxford, Jan., 1941.

**Macdonnell, JAMES** (1842-79). Scottish journalist. Born at Dyce, Aberdeenshire, April 21, 1842, a member of an old Highland family, he was educated at Bell's school, Inverness, and at the parish schools of Duftown and Rhynie. After a period on the staff of various Scottish newspapers, he joined the *Daily Telegraph* in 1865, serving as special correspondent in France, 1870-71; and was a leader-writer on *The Times*, 1875-79, making a special study of constitutional problems and French politics. He died in London, March 2, 1879. His valuable but unfinished sketch of contemporary French politics, *France since the First Empire*, was edited by his widow and published 1879.

**Macdonnell Range.** Mountain range of Australia, in the Northern Territory. It lies along the tropic of Capricorn, and its elevation causes rainfall, which is drained away by many streams, mostly terminating abruptly in the dry lowland. The overland telegraph crosses the range N. of Alice Springs. The Arltunga goldfield at the E. end became famous in 1903.

**Macdonogh, SIR GEORGE MARK WATSON** (1865-1942). A British soldier. Born March 4, 1865, he entered the Royal Engineers in 1884. He became general staff officer, War office, in 1912 and was

promoted major-general for services in the field in the early months of the First Great War, being in charge of military intelligence from 1915 to 1918. In the latter year he was promoted adjutant-general, and in 1919 lieutenant-general. He was knighted in 1917, retiring from the army, 1925. In 1933-34 he was president of the federation of British industries. He died July 10, 1942.

**Maddougall, WILLIAM** (1822-1905). Canadian statesman. Born at Toronto, Jan. 25, 1822, he entered the Canadian parliament in 1858, and held various government posts. In 1866 he was minister of Marine during the Fenian troubles, and was sent to London with other delegates to confer with the imperial authorities on questions which had arisen between the several North American possessions. In 1868 he became the first lieutenant-governor of Rupert's Land. He died May 29, 1905.

**McDougall, WILLIAM** (1871-1938). British psychologist. A native of Lancashire, he studied medicine and later became reader in mental philosophy at Oxford and at University College, London. He was subsequently professor at Harvard university, 1920-27. McDougall's main importance lay in his perception of the essential connexion between physiology and psychology, his doctrines being expounded in many books, of which the most important were *Body and Mind*, 1911; *The Group Mind*, 1920; *Outline of Psychology*, 1923; *Energies of Man*, 1932. In these he showed himself an opponent both of the Freudian and Pavlovian schools. He died Nov. 28, 1938.

**MacDowell, EDWARD ALEXANDER** (1861-1908). An American composer. Born at New York, Dec. 18, 1861, he studied piano-playing in Europe, and obtained a teaching appointment at Darmstadt conservatoire, where Liszt helped to introduce him to public favour. Returning to the U.S.A. in 1888, he settled in Boston. He became professor of music at Columbia university, 1896, but resigned in 1904, and died Jan. 24, 1908.

MacDowell's compositions include the Indian suite, several orchestral symphonic poems, songs,

and choruses, and a great number of highly popular piano pieces, of which the best-known are probably *Moon Pictures*, *Woodland Sketches*, *Sea Pieces*, and *Fireside Tales*. *Consult Life*, J. F. Parte, 1922.

**McDowell, IRVIN** (1818-85). American soldier. Born at Columbus, Ohio, Oct. 15, 1818, he was educated at West Point. He first saw service in the Mexican War, and during the Civil War was in command of the army of the Potomac. His defeat at the first battle of Bull Run in 1861 led to his being superseded by McClellan. As a corps commander he was subsequently engaged at the battle of Cedar Mountain and the second battle of Bull Run. He died at San Francisco, May 4, 1885.

**Macduff, Burgh** and seaport of Banffshire, Scotland. It stands on the Moray Firth, at the mouth of the Deveron, 46 m. N.W. of Aberdeen. It has a rly. station. Across the Deveron is Banff, a bridge connecting the two. Its harbour, with, in addition, a basin and a slipway, constructed in the 20th century, has facilities for shipping. Apart from the fisheries, the industries are connected with shipping, boat-building, engineering, agriculture, etc. Macduff was a fishing village named Doune before the superior, the duke of Fife, renamed it Macduff, the family name. It was created a burgh of barony of regality in 1783. The town is a favourite summer resort; an open-air swimming pool and an 18-hole golf course at Tarlair are elements in its popularity.

**Macduff, Thane** or earl of Fife. A semi-legendary figure of the 11th century, he is mentioned by early Scottish historians as having conspired with Malcolm Canmore to overthrow the usurper Macbeth. Threatened by Macbeth, he fled to England, and although his castle was destroyed, the tale that his wife and children were massacred has no foundation in fact, although it was utilised by Shakespeare for dramatic purposes. By his aid Malcolm defeated Macbeth at Lumphanan in 1057.

**Mace** (Fr. *Masse*). Heavy-headed staff or club, formerly much used in close combat, particularly to protect the king's person, and frequently borne in battle by



Mace of the House of Commons. The staff was made in 1649, and the head, with royal initials and symbols, was added at the Restoration



ecclesiastics, to whom the sword was a forbidden weapon. It is now a symbol of authority, *e.g.* the mayoral mace. The mace of the house of commons is the emblem of the Speaker's authority as the servant of the house, and is removed from its place on the table when the Speaker leaves the chair and the house goes into committee, or rises or when the sitting is suspended. It was the mace to which Cromwell was referring when, as alleged, he exclaimed "Take away that bauble," thereby dismissing the Long Parliament.

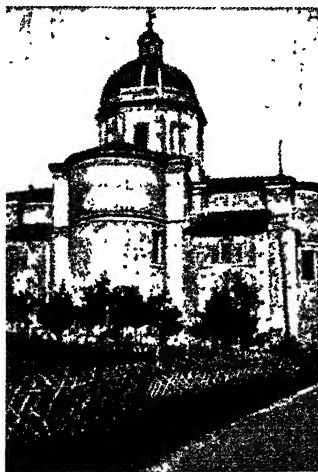
**Mace.** Fleishy, inner covering, or aril, of the nutmeg, which, dried in the sun, is used as a spice. When fresh it is a bright red, but on drying it fades to a brown. It is very aromatic, and contains both an essential and a fixed oil. *See* Nutmeg.

**Mace, JEM** (1831-1910). British pugilist. He was born at Beeston, Norfolk, April 8, 1831. He suddenly acquired fame by beating Bob Brett, 1860; and then the holder of the championship, Sam Hurst, June 18, 1861. As champion of the ring, a title he held intermittently until his retirement in 1871, he won a contest, and lost another, with Tom King; afterwards occurred his battles with Joe Goss, of which he won two, the other being drawn. He died Nov. 30, 1910.

**Macedonia.** In ancient geography, country of S.E. Europe, situated N. of Hellas, properly so called. It was bounded S. by Thessaly and the Aegean Sea, E. by Thrace, and W. by Illyria. The chief rivers were the Lydias, Strymon, and Axios (Vardar); the chief towns Edessa, Pella, Pydna, Philippi, Potidaea, and Thessalonica, the two first being in succession the capital, while Thessalonica is well known in connexion with S. Paul. Macedonia was famous for its salt, gold, and silver mines, and for its vineyards. The people, although regarded by the Greeks as semi-barbarians, were undoubtedly of Hellenic race. They spoke the Greek language, and had probably stayed behind in the north during the advance of the rest of the Greeks southwards.

Some of the earlier kings endeavoured to improve the conditions of the country, patronised Greek men of learning, and introduced Greek culture, but it was not until the reign of Philip II (359-336 B.C.) that Macedonia became important, reaching the climax of its greatness under his successor, Alexander the Great. At his death

(323) the Macedonian empire included Macedonia, Greece, Thrace, Asia Minor, Syria, Egypt, Babylonia, Assyria, part of modern Persia, Afghanistan, Baluchistan, and Central Asia. Under the Diadochi, or successors of Alexander, these possessions were contested among various claimants. After a period of civil wars, Antigonus Gonatas established himself firmly on the throne of Macedonia in 278. Later its kings came into collision with the Romans. After the battles of Cynoscephalae, 197; Pydna, 168; and the futile rising of the pretender, Andriscus, 148, also defeated at Pydna, Macedonia in 146 became a Roman province. After the division of the empire into E. and W., in A.D. 395, Macedonia became one of the divisions of the prefecture of Illyricum. It was settled by Slavs in the 6th



Macerata, Italy. Church of S. Maria delle Vergini, built 1573, outside the city walls

century, and in the 13th century it was formed by the Crusaders into the kingdom of Thessalonica, which was bestowed upon Boniface of Montferrat. In the 15th century, with the rest of Greece, it came into the power of the Turks.

In current usage the name is applied to an area in N. Greece and S. Yugoslavia, bounded roughly by the Crna Gora to the N., the Albanian frontier mts. to the W., the river Mesta to the E., and S. by a line following the river Vistritza to reach the sea at Mt. Olympus. Salonica is the chief town; in the Yugoslav part, Bitolj (Monastir), Skoplje (Uskub), and Nish are important. Tobacco is the main crop.

Macedonia has always been a centre of unrest. Turkish until

the Balkan Wars 1912-13, it was then divided between Bulgaria, Greece, and Serbia; the Bulgarian portion was ceded to Greece after the First Great War. The German invasion of Greece, April 6, 1941, took place through Macedonia, which was overrun within a few days. Bulgaria immediately annexed the E. of the country, but at the end of the war the boundaries reverted to those of 1940. Communist disturbances broke out in 1944 in Macedonia, where civil war raged from 1946 to 1949. *See* Greece in N.V.

**Maceio** or **MAÇAYO**. Seaport of Brazil, and capital of the state of Alagoas. It stands on a small peninsula between the sea and the Lagoa do Norte, on which its port Jaraguá is situated. Cotton goods and machinery are manufactured; there is an American meat packing house; and a trade is carried on in sugar, rum, castor-oil seed, hides, and skins. Maceio has rly. and highway connexion with Pernambuco, 130 m. N.E. Pop. 129,105.

**Macerata.** Province of the Marches, N.E. Italy. Bounded N. by Ancona, S. by Ascoli Piceno, E. by the Adriatic Sea, and W. by Perugia, it is traversed by spurs of the Apennines, and watered by the rivers Potenza and Chienti. It covers 1,070 sq. m.

**Macerata.** City of Italy, in the Marches, capital of the prov. of Macerata. It stands at an alt. of 918 ft., between the rivers Chienti and Potenza, 17½ m. by rly. W. of Porto Civitanova. Enclosed by ancient walls and towers, it has a cathedral, and several handsome churches, a well-stocked library, a medieval town hall, and several ancient palaces. The small university dates from 1290. The chief industries are the manufacture of glass and chemicals. Macerata was founded after the destruction of Ricina by Alaric, in 408. The city was captured undamaged, July 1, 1944, by the British 8th army. Pop. 26,708.

**Maceroni, FRANCIS** (1878-1846). Anglo-Italian soldier and inventor. Born in Manchester of Italian and English parents, July 25, 1878, he went to Italy in 1803, entered the Neapolitan army, rose to colonel's rank, saw active service, and in 1814 became aide-de-camp to Murat, king of Naples, who sent Maceroni on a diplomatic mission to



Francis Maceroni, soldier and inventor

England. He settled there on Murat's fall, and invented a steam road car, which plied between London and Brighton in 1834, and propounded plans for asphalt paving, street lighting, and flying machines. Maseroni died July 25, 1846. *Consult his Memoirs, 2 vols., 1838.*

**McEvoy, AMBROSE** (1878-1927). British painter. Born at Crudwell, Wilts, Aug. 12, 1878, he studied at the Slade, where he met John and Orpen. His early interiors with figures were influenced by Dutch masters, but he later developed a personal style in landscape and portraiture. In portraits he was most successful with women, e.g. the duchess of Marlborough, the countess of Wimborne. He is represented at the Tate, London, and the Luxembourg, Paris. A.R.A. from 1924, he died Jan. 4, 1927.

**Macfarren, SIR GEORGE ALEXANDER** (1813-87). British composer. He was born in London,



Sir G. A. Macfarren,  
British composer

March 2, 1813, entered the Royal Academy of Music in 1829, and was appointed professor of harmony there in 1837 and principal in 1875. He did much to raise the standard of British orchestration, and was a voluminous and scholarly composer. Conductor at Covent Garden for 30 years, from 1845, he was then appointed professor at Cambridge. He became totally blind in 1865. He was knighted in 1883, and died Oct. 31, 1887. His principal works are *The Devil's Opera*, 1838; *May Day* (cantata), 1857; *Robin Hood*, 1860; the oratorios *The Resurrection*, 1876, and *King David*, 1883.

**Macgill, PATRICK** (b. 1890). Irish writer, born in Donegal. From 12 to 19 he did odd jobs on farms and as a navy. Having published a volume of verse, *Gleanings from a Navy's Scrap Book*, he joined the *Daily Express*, and in 1912 received an appointment in the library at Windsor. With the London Irish in the First Great War, he saw much service on the western front, about which he wrote *Red Horizon*, 1916; *The Brown Brethren*, 1917. A strikingly realistic novel of labouring life was *Children of the Dead End*, 1915. Other stories were *The Rat-Pit*; *Sid Puddiefoot*, 1926; *Una Cassidy*, 1928; *The House at the World's End*, 1935. A play, *Suspense*, was acted in 1930.

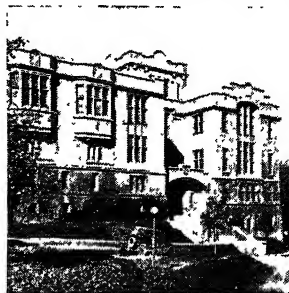
**McGill University.** Canadian university. It owes its origin to property left by James McGill of Glasgow, who died in Montreal in 1813. It was incorporated in 1821 and 1852. Many benefactions have been received from citizens, including Sir W. Macdonald and Lord Strathcona.

The university consists of McGill, the original college in Montreal, the Workman building, the Macdonald colleges for physics, engineering, chemistry, and mining, the old and new medical buildings, and the Royal Victoria College, Victoria, opened in Montreal in 1899, is the women's department; it was built and endowed by Lord Strathcona. Macdonald, at St. Anne de Bellevue, is devoted to agriculture. McGill has large libraries, laboratories, an observatory, a farm, hospitals, and a medical museum. It is specially famed for its teaching of engineering and medicine. Music, teaching, household science, and commerce are other departments. Four theological colleges in Montreal are connected with the university, which has residential facilities for both men and women. It is under a board of governors, who unite with members of the staff to form the corporation.

**Macgillcuddy's Reeks.** Group of mts. in co. Kerry, Eire. They lie to the W. of Killarney, and include Carrantuohill (the inverted reaping hook), 3,414 ft., the highest summit in the country; Beenkeragh, 3,314 ft.; Caher, 3,200 ft.; Curraghmore, 2,695 ft.; Feabrah, 1,894 ft.; Brassel, 1,888 ft.; and Drishana, 1,490 ft. In the basin between the Reeks and the Mangerton group are the famous lakes of Killarney. The ascent of Carrantuohill is an exacting climb, but the summit, composed of shingle, commands magnificent views.

**McGovern, JOHN** (b. 1887). Scottish politician. He was born Dec. 13, 1887, and served his apprenticeship before becoming a master plumber in 1909. He entered parliament in 1930 as I.L.P. member for Shettleston, Glasgow. During 1931-33 he was arrested and imprisoned for offences committed in the name of free speech during demonstrations

by the unemployed, and made a protest in the house of lords during the king's speech against the failure to restore unemployment relief and end the means test. In 1934 he led a Glasgow-to-London hunger march. He retained his seat in the elections of 1945 and 1950, resigning from the I.L.P., however, in Nov., 1946, and joining the Labour party in 1947.



McGill University, Montreal. Part of the medical building  
Courtesy of Canadian Pacific Rly.

**McGowan, HARRY DUNCAN**

**McGOWAN, 1ST BARON** (b. 1874). A British industrialist. He was born in Glasgow, June 3, 1874, and joined Nobel's explosives company in 1889, becoming managing director in 1918. President of Imperial Chemical Industries in 1926, he became chairman on the death of Lord Melchett in 1930, and was also managing director until 1938. His other interests were banking and insurance. He received a knighthood in 1918 and was raised to the peerage in 1937.

**Macgregor, JOHN** (1825-92). Scottish traveller, known as Rob Roy. The son of a soldier, he was



John Macgregor,  
Scottish traveller

born Jan. 24, 1825. After education at Trinity College, Dublin, and Trinity College, Cambridge, he became a barrister. His time was mainly passed in travel, a notable feat being a journey in his canoe, Rob Roy, over the waterways of Europe, this being something of a pioneer undertaking. His writings include *A Thousand Miles in a Rob Roy Canoe*, 1866. He travelled also in America and other continents. Macgregor was interested in work among boys, being associated with Lord Shaftesbury in philanthropy, and was a member of the first London school board. He died July 16, 1892. *Consult Life, E. Hodder, 1894.*

**Mach, ERNST** (1838-1916). An Austrian physicist. He was born Feb. 18, 1838, at Turas in Moravia. Professor of mathematics at Graz, 1864, of physics at Prague, 1867, and finally at Vienna from 1895 to 1901, Mach was the leading

exponent in his day of physical psychology, and developed a theory about man's relation to his surroundings which had a bearing on Einstein's principle of relativity. Analysis of Perceptions, 1886, was perhaps the best known book by Mach. On retiring he was made a member of the Austrian house of peers, dying Feb. 9, 1916. See Mach Number.

**Machado, BERNARDINO** (1851-1944). A Portuguese statesman. Born July 28, 1851, at Rio de Janeiro, he went to Portugal and in 1882 entered parliament. A republican, he was a member of the government after the revolution of 1910. Prime minister when the First Great War broke out, he declared that in all circumstances his country would be sympathetic towards her old ally, Great Britain. Machado became president in 1915, but in a revolution two years later was arrested and exiled. He was again prime minister in 1921, president 1925-26, and exiled 1927. He died April 29, 1944.

**Machado, MANUEL** (1874-1947). Spanish writer. Educated at Seville university, he joined his brother Antonio (d. 1939) and J. R. Jimenez in a literary movement which stirred the national spirit at the beginning of the 20th century. He brought out arrangements of plays by Lope de Vega, and produced a play (in collaboration with his brother), *Desdichas de la Fortuna*, 1926. He will probably be remembered most by his Andalusian poetry, one of his finest pieces being a sonnet to de Falla. He died in Madrid early in 1947.

**Machaerodus** (Gr. *machaira*, sword; *odous*, tooth). Extinct genus of cats. Known as sabre-toothed tigers, they had enormous upper canine teeth, 8 to 10 ins. in length. Fossil remains are found in Pleistocene strata in Europe and America, and show the creature to have been about the size of a tiger. The teeth were probably used as stabbing instruments.



Machaerodus. Reconstruction of this prehistoric member of the cat tribe

**Macheath, CAPTAIN.** Chief male character in *The Beggar's Opera* (q.v.), by John Gay. He is a highwayman, but the action is chiefly concerned with his audacious amours in and out of jail, specially with Polly Peachum and Lucy Lockit. Among his songs are the well-known "How happy could I be with either!" and "When the heart of a man is depressed with cares."

**Machen, ARTHUR** (1863-1947). British writer. Born at Caerleon Mon, March 3, 1863, Arthur Llewellyn Jones-Machen was educated at Hereford. *Eleusinia* (1881) was his first book, followed by *The Anatomy of Tobacco*, 1884, and *The Chronicle of Clemendy*, 1888. Later works included two volumes of autobiography, *Far-Off Things*, 1922, and *Things Near and Far*, 1926, as well as much macabre fiction, the most noteworthy examples of which were *The Great God Pan*, 1894, and short stories in the mood of R. L. Stevenson's *New Arabian Nights*, these being eventually collected in *The House of Souls*, 1930. In *Hieroglyphics*, 1923, he outlined his artistic creed. With Benson's company 1900-02, he played Shakespearian roles. He later joined the staff of the *Evening News*, retiring from journalism after the First Great War. He died at Beaconsfield, Dec. 15, 1947.

**Machete.** Knife of Spanish origin, much employed by the native races of Central and S. America. It has a characteristic long, thick blade, and is used as a tool as well as a weapon. *Pron.* Mah-chay-tay.

**Machiavelli or MACCHIAVELLI, NICCOLÒ DI BERNARDO DEI** (1469-1527). Italian author and statesman. Son of a jurist, and member of an old Tuscan family, he was born at Florence, May 3, 1469. His learning was acquired chiefly by private study. In 1498, four years after the expulsion of the Medici and the foundation of the Florentine republic, he became secretary to the Ten, a chancery combining the duties of war office and ministry for home affairs. He brought to his work an ardour inspired by admiration for old Rome. He was employed on several diplomatic missions, conceived an admiration for the unscrupulous but successful methods of Cesare Borgia, and held office until the Medici returned in 1512. He was then involved in the downfall of his patron, the Gonfalonier Soderini, and was cast into prison,

accused of complicity in an attempt to restore the republic, put to torture, but soon after set free.

Believing that some form of republican government might be built up under the Medici, he declared his readiness to serve them, but, except in slight matters, his assistance was not sought. He



Niccolò Machiavelli,  
Italian author

From a painting by Santi di Tito

retired to his villa near San Casciano, seven miles from Florence, where he wrote *Il Principe* (*The Prince*), and his *Discorsi* (*Discourses on the First Decade of Titus Livius*). In 1520 he produced his *Arte della Guerra* (*Art of War*), and was commissioned by Giulio de' Medici (later Pope Clement VII) to write his *Istorie Fiorentine* (*History of Florence*). He wrote also several comedies, including *La Mandragola*, a picture of the men and society of his time, and perhaps the finest comedy of the Italian stage. When the Medici were once again banished from Florence, Machiavelli was disappointed in his hope of office, and died June 22, 1527, leaving four sons and a daughter by his wife, Marietta Corsini. He was buried at Santa Croce, where in 1787 a stately cenotaph was erected to his memory.

Machiavelli's fame rests upon *The Prince* and the *Discourses*, related books concerning respectively principalities and republics. His main theme, illustrated by references to the rulers of his own time, is the supremacy of the secular state. He regarded the state as the supreme end, and all means to preserve it as justified. Morality had nothing to do with the matter, and the ruler must be both lion and fox. The world he

regarded as always the same; man growing neither better nor worse.

For four centuries Machiavelli's name has been used as a term of reproach, largely because of misunderstanding. In Elizabethan literature alone hundreds of references connect him with the Evil One. Butler, in *Hudibras*, erroneously derived Old Nick from Niccolò. But Machiavelli did not scoff at private virtue; it was his intention merely to separate ethics from political science. The Prince was never published by the author, with the result that its text is debatable. But there is no division among critics as to the precision and clarity of its style, which has been compared with that of the clinical lecturer, or as to Machiavelli's mastery of the subtle irony of the literal statement. Several editions and translations exist. See Italy: Literature; Sovereignty.

**Bibliography.** Trans. of principal prose works, C. E. Detmold, 1861; *Life and Times*, P. Villari, 1877-82, popular ed. 1904; *Pioneer Humanists*, J. M. Robertson, 1907; *Life*, G. Prezzolini, Eng. trans. 1928; *Machiavelli*, J. H. Whitfield, 1947.

**Machicolation** (O.Fr. *macher*, to crush; *coulis*, groove). Term used in fortification. In medieval

fortresses it was the provision of an overhanging parapet with holes through which molten lead, stones, etc., could be dropped upon the attacking forces. Such loopholes provided also protection from missiles aimed to drop on the defenders. The word is sometimes used for loopholes constructed in fortifications for downward fire, and also for ornamentation in imitation of the original machicolation. The machicolis was a contrivance used in medieval times for casting stones down upon the enemy.

**Machinability.** The capacity of a material to withstand such mechanical finishing operations as bring it to desired standards of surface finish, size, and shape. No standard test is acceptable generally, because many variable factors must be measured. Usually the process which a material must stand: (a) cutting with a shaped

cutter; (b) abrasion with hard particles of various sizes embedded in various kinds of matrices; (c) localised forming, with shaped formers or rolls, which causes the material to flow into the desired forms. See Grinding.

**Machine-Gun.** Automatic gun giving a continuous volume of fire by a single pressure on the trigger. It thus has a fire-power equivalent to that of a number of men armed with single-shot weapons.

The first attempts to devise automatic discharge of missiles in rapid succession from the same weapon were made long before the invention of fire-arms, and were inspired by the difficulty of breaking the ranks of massed pikemen, infantry's then defence against the cavalry charge. The ordinary missile weapon lacked range, was inaccurate, and was slow in delivery. Early in the 5th century B.C., Dionysius of Syracuse introduced the polybolos, a weapon resembling a cross-bow which fired a succession of arrows fed to it by force of gravity. At the battle of Hastings some of the English archers used bows designed to discharge more than one arrow at a time. Soon after the introduction of gunpowder in the 14th cent., the Italians introduced the *orgue*, a crude form of machine-gun. It consisted of ten iron tubes mounted side by side and fired by a single lock and quick match which ignited the charges of all the barrels in rapid succession. It was first used at the battle of Piccardina, 1467. A somewhat similar device, the *ribaudequin*, so-called from the laughter-like noise of its fire, consisted of twenty arquebuses connected to a combustion box common to all; it was used with devastating effect by the Venetians at the battle of Ravenna, 1512.

In 1718 James Puckle, a Londoner, patented a revolver-gun consisting of a single barrel having at the breech a revolving cylinder with nine chambers. Each chamber contained a bullet and charge of gunpowder and was aimed with the breech by turning a crank. When one cylinder or magazine had fired its nine chambers, it was replaced by another fully loaded and primed. The inventor stated that the shapes of the chambers and of the bullets could be varied, so that square bullets could be used against heathens and round bullets against Christians. Puckle's machine-gun was the first with a single barrel; it included

also elevating and traversing screws and a tripod mounting, features which became accepted parts of heavy machine-guns. The weapon proved inefficient and does not appear ever to have been used in action.

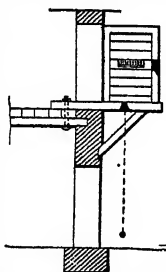
About the middle of the 18th cent. a French artillery officer designed a machine-gun having three rows of ten barrels, each barrel 44 ins. long with a bore of .75 in. At the breech of the gun was a plate having a chamber for each barrel, and in the rear of the chambers was a percussion box with which each chamber was connected. A hammer, falling by gravity, struck a percussion cap which ignited the powder in the combustion box, which in turn ignited the powder in the barrel chambers, so firing all 30 charges simultaneously. A specimen of this gun is preserved in the rotunda at Woolwich arsenal.

#### Early Automatic Weapons

In 1854 Sir John Lille invented what was called an automatic rifle battery. It had twelve barrels in two rows and behind each barrel was a chambered cylinder similar to that of a revolver, half the cylinders being 10-chambered, half 20-chambered. Each chamber held a bullet, charge, and percussion cap, and the weapon was fired by turning a handle, which caused the cylinders to revolve and a series of hammers to fall, striking the percussion caps. In 1860 Dr. Joseph Requa, an American, introduced his rapid-fire gun, consisting of 25 barrels laid flat on a platform. This weapon was used during the American Civil War, being mounted on a fort at Charleston, S. Carolina.

All these early machine-guns proved impracticable owing to the problem of reloading the discharged barrels. The best that could be achieved was the rapid discharge of a number of barrels, after which fresh charges had to be rammed home in each barrel, so exposing the crew to enemy fire. Moreover, the weapons were inaccurate and too cumbersome for the firer to change target during discharge.

With the invention of the breech loader and the percussion cartridge, the latter containing missile, propellant, and percussion charge, the machine-gun became a practicable weapon. The first breech-loading machine-gun firing cartridge rounds was the mitrailleuse invented by a Belgian officer, Capt. Fafschamps, in 1851, and introduced into the French army



Machicolation. Sectional diagram of gallery built out of a window to permit of downward fire

1869. The mitrailleuse consisted of 37 barrels assembled round a central axis and contained in an iron tube similar to the barrel of a field gun. It was loaded by a magazine in the form of an iron plate drilled with 37 holes, with a 13 mm. cartridge inverted in each hole corresponding with the position and number of the barrels. The gun was fired by the turning of a handle, one revolution discharging all the rounds in the magazine. The maximum rate of fire was 12 magazines a minute, i.e. 444 rounds. Mitrailleuse guns were first in action at the battle of Saarbrücken, opening engagement of the Franco-Prussian war, Aug. 2, 1870, but owing to faulty tactical use had little effect on the outcome of the engagement. At the battle of Gravelot later in the same month, the mitrailleuses were better sited and inflicted heavy losses on the German infantry.

As a reply to the mitrailleuse, the Germans developed the field machine-gun, which had 24 barrels mounted in four parallel rows of six and fired 300 rounds a minute to an effective range of 1,000 yds. But the loading mechanism was too complicated, and, like those of the mitrailleuse, the barrels became overheated and warped in their frames after only a short period of fire.

#### The Gatling Gun

The first really practicable machine-gun was invented by Dr. Gatling (*q.v.*), of Chicago, in 1862. This gun consisted of 6-10 rifle barrels fixed at equal distances round a central axis and mounted on a field-gun carriage. Each barrel was complete with bolt, firing pin, extractor, and ejector. Placed above the barrels was a gravity drum containing the rounds to be fired. The gun was not fully automatic since a crank had to be turned, causing the barrels to revolve round the central axis; but the actions of inserting a round, closing the breech, releasing the sear of the firing pin, firing, opening the breech, extracting and ejecting the empty case, and inserting a new round were performed automatically during the revolution of the barrels. As the uppermost barrel passed under the drum a round dropped into its breech; as it passed to the next position the cartridge was pushed home and fired on reaching the lowest position below the drum. When the barrel passed up on the left side of the central axis the empty case

was extracted from the breech, and as it moved farther up was ejected.

First used in the American Civil War, the Gatling gun fired 350 rounds per min. It was introduced into the British and other European armies, but suffered from two serious defects: the movement of the barrels, caused by the turning of the crank, rendered it inaccurate, while the cranking itself had to be carefully timed: if the handle were revolved too fast, the rounds dropping from the drum missed the centre of the breech and jammed. The Gatling was first used by the British in the Zulu war of 1879.

Other multiple-barrelled machine-guns were the Nordenfeldt and Gardner. The Nordenfeldt had from 3 to 10 rifle barrels mounted in a single row and was gravity fed from ammunition chutes. The Gardner gun was somewhat similar, but an improved loading action made fewer barrels necessary and increased firing rate to 357 rounds a min.

All multiple-barrelled machine-guns suffered from excessive recoil and required a heavy mounting; consequently they were nearly as cumbersome in the field as artillery pieces. They were usually sited with the field artillery, but were much more vulnerable than field guns. Moreover, none of these weapons was truly automatic; that is, a considerable amount of hand-work was required in loading, while manual work was essential to turning the crank or other device upon which fire depended. On the other hand, they proved useful weapons on warships as secondary armament for beating off torpedo-boat attacks. During the period 1880-1900 most British warships had batteries of Gatlings, Gardners, and Nordenfeldts ranging from .303 to .45 in. in calibre.

#### Hiram Maxim's Invention

The first true machine-gun, a single-barrel weapon requiring merely the pressing of a trigger to eject a stream of bullets, was invented by Hiram Maxim in 1885. In the Maxim gun, the force of recoil generated by a portion of the explosion when the initial round is fired impinges on a baffle fitted to the barrel, forcing it to the rear; it is then returned to the forward position by a heavy coil spring. The breech-block is connected to the barrel by a series of levers, so that by means of the reciprocating motion it ejects the spent case, cocks the hammer,

feeds in a new round, and fires it. The fabric or clip belt, holding 250 rounds, is automatically fed into the side of the breech block, each recoil of the gun pulling the belt through for a distance of one round. As finally developed for firing .303 ammunition, the Maxim fired 600 rounds per min. to an effective range of 2,500 yds. It weighed 60 lb. and its tripod 48 lb.

#### Developments of the Maxim

Maxims were adopted by the British army in 1889 and first used in the Matabele war of 1893. The gun was also used with devastating effect against the charges of Ghazis at the Malakand pass in the Chitral expedition of 1895, and by Kitchener in the Sudan campaign of 1896. A later development of the Maxim, the pompom, which had a calibre of 1.45 in. and fired steel shells weighing 1 lb., was used by the Boers in the S. African war. Neither the .303 Maxim nor the pompom proved particularly successful in the Boer war, chiefly owing to the fact that both types were mounted on heavy wheeled carriages and used tactically as field artillery. Mounted on tripods and used as an infantry weapon, Maxims were used by the Russians in the Russo-Japanese war, 1904-05, and did heavy execution until the Japanese infantry was equipped with the Hotchkiss (*q.v.*) which, gas-operated and air-cooled, had originally been designed for the French colonial army in N. Africa.

As the result of the lessons learned from this campaign in Manchuria, the Germans equipped their infantry with the Maxim and retained it as their principal machine-gun throughout the First Great War. At the outbreak of that war every British infantry battalion was equipped with two tripod-mounted Maxims, every cavalry unit had two Vickers machine-guns. The Vickers had been used on a small scale during the S. African war as a cavalry weapon, being lighter than the Maxim. It weighs 36 lb. without its mounting and fires 600 rounds a min. to an extreme range of 2,900 yds. Eventually every British infantry company was provided with two Vickers or Maxim guns. It was found, however, that the ordinary machine-gun, although a deadly weapon in defence and for laying a barrage to cover attacking infantry, was too heavy when it had to be carried forward by advancing troops. Accordingly, a number

of light machine-guns were developed, of which the most successful was the Lewis, adopted by the British army late in 1915. The Lewis gun weighs 26 lb. and is worked automatically by the pressure of the gas, resulting from the explosion of the charge, assisted by a return spring. When the trigger is pressed, a backward and forward movement, with the ignition of a cartridge at the end of each forward movement, continues until the magazine is empty. The gunner may fire either single or continuous shots up to the full capacity of the pan-shaped magazine, which holds either 47 or 97 rounds. The gun is air-cooled and can be fired from the shoulder in the prone position or from the hip when moving forward. The barrel is provided with a small, permanent bipod.

With the development of air warfare the machine-gun proved itself an ideal weapon both for mounting on aircraft (see Air Fighting: Armament) and as a ground defence against low-level air attack. The first airborne machine-guns were single or twin Lewis guns fitted to Scarfe rings and mounted on the Martinsyde Scout late in 1915. Thereafter the machine-gun became the fighter aircraft's offensive and defensive weapon, and at the outbreak of the Second Great War the number carried by a single aircraft had increased to the eight Browning guns mounted in the wings of the Spitfire. Machine-guns also proved the ideal armament for armoured vehicles, and although these were eventually mounted with shell-firing guns equivalent in calibre to field artillery pieces, the machine-gun continued to be fitted to them as secondary armament.

Between the First and Second Great Wars the machine-gun underwent further changes, the general tendency, as far as the infantry weapon was concerned,

being towards lightness; a demand necessitated by the increased mobility of infantry. One of the most notable light machine-guns for infantry work was the Bren, with which a proportion of British infantry was equipped at the outbreak of the Second Great War, and which eventually became the standard British infantry machine-gun. Modified and lightened versions of the Vickers and Browning were also extensively used. The principal German machine-gun of the Second Great War was the M-G.15, which weighed 26 lb. and fired standard 7.92 mm. small arms ammunition at the rate of 900 rounds a min., 75 rounds being contained in the double-drum magazine. The standard Italian machine-gun was the Brega, which weighed 25½ lb. and fired 256 ammunition at 1,000 rounds a min. Both the M-G.15 and the Brega were recoil operated.

All types of machine-guns were adapted for anti-aircraft work during the Second Great War. In most cases they were mounted in pairs or fours, pressure on a single trigger firing all guns simultaneously. In the case of water-cooled guns, the water jackets were removed for A.A. work, cooling being by air flow over the barrel. Even in the case of the original water-cooled infantry machine-gun, water-cooling is frequently dispensed with: when the barrel becomes overheated it is replaced by a spare. From the machine-gun firing ordinary small-arms ammunition was developed the heavy machine-gun (or cannon) firing shells.

One machine-gun can deliver a volume of fire equal to that of 30 riflemen, while occupying 1/10th of the space needed for 30 men, and requiring only 1/10th of that number, or less, to handle it. As a defensive weapon, the machine-gun is easily concealed, and after

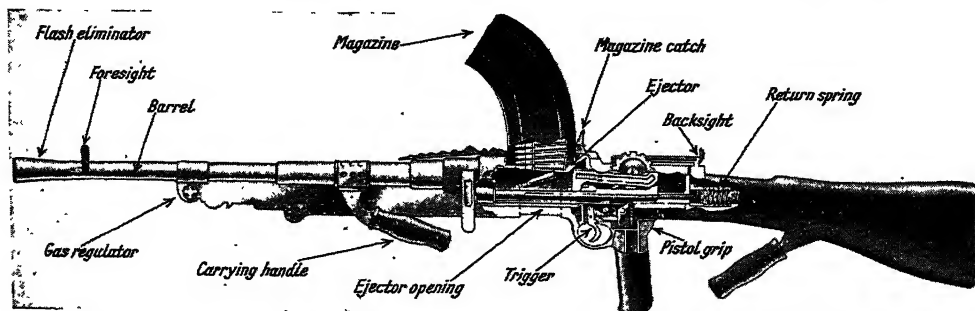
it opens fire is difficult to detect, particularly since the introduction of smokeless powder and the fitting of condensers to absorb the steam from water-cooling systems. Provided it has been sited in a strong emplacement, it is difficult to destroy by artillery or air bombardment and, manned by a resolute crew, takes heavy toll of the advancing infantry. Even in the Second Great War well-protected and carefully sited machine-gun posts were capable of delaying armour. The essentials of the successful defensive use of machine-guns are: abundant supply of ammunition; concealment; reservation of fire until a target of sufficient importance presents itself; and accurate knowledge of all ranges in the area operated across. As an offensive weapon, the machine-gun is most effectively used to give flanking fire to advancing infantry and to deliver overhead fire to drive the defence to cover between the forward infantry rushes. In both offence and defence, machine-gun fire is most effective in short bursts rather than as continuous fire. See Arquebus; Browning Gun; Infantry; Ordnance; Tactics, etc.

David Le Roi

**Machine Gun Corps.** Former unit of the British army. Raised in Oct., 1915, in view of the increasing tactical importance of the machine-gun in warfare, the corps amalgamated into a single unit the machine-gun companies then attached to brigades. It was divided into infantry, cavalry, heavy, and motor branches. With the introduction of machine-guns into the ordinary infantry platoon (1921), the corps was disbanded. A bronze statue of David designed by Derwent



Machine Gun Corps badge



Machine-Gun. Diagram of Bren machine-gun, British light automatic weapon of the Second Great War



Wood was unveiled at Hyde Park Corner on May 10, 1925, as a memorial to the corps, with the inscribed quotation: Saul hath slain his thousands, and David his ten thousands.

**Machine Tools.** Metalworking or woodworking tools driven by mechanical power. Examples are: (metalworking) lathes, planers, milling machines, drill presses; (woodworking) circular saws, band saws, planing machines, moulding machines, mortising machines. It is computed that British industries use machine tools worth about £30,000,000 annually. Light machine tools include some which are really mechanised hand tools, such as electric or pneumatic drills, nut-runners, or small circular saws. These the workman guides by hand, the gain over hand tools being in speed, accuracy, and absence of fatigue. Bench tools include drill presses, punches, die presses, etc., in some of which the operation may be entirely automatic, or semi-automatic.

Lathes (*q.v.*) range from a tiny one used by watchmakers to a gigantic machine which needs an entire shop for its accommodation and may be more than 60 ft. in length. This last would be used for machining heavy forgings such as engine crankshafts. Planing machines have a similar range.

**Mach Number.** In aeronautics, the ratio of aircraft speed to the speed of sound under the same atmospheric conditions. It is named after the Austrian physicist Ernst Mach (*q.v.*), and is expressed as a decimal. The instrument called a machmeter was evolved to register the Mach number.

**Machpelah.** Locality in Hebron, Palestine. Here in a double cave on the hillside is the traditional burial place of Abraham and other Jewish patriarchs (Gen. 23). Above the cave rises the Mahomedan mosque of El Khulil (the friend, *i.e.* Abraham). The summit of the hill commands a fine view of the Vale of Mamre. See Abraham; Hebron.

**Machynlleth.** Urban dist. and market town of Montgomeryshire, Wales. It stands on the Dovey, 13 m. by rly. N.E. of Aberystwyth, and is a quiet holiday resort. Here in 1402 Owen Glendower declared himself prince of Wales and held a parliament. Until 1894 the place was a borough, and it formerly made woollen goods. Market day, Wed. Pop. 1,892.

**M'Ilwraith, Sir Thomas** (1835–1900). Australian statesman. He was born at Ayr, Scotland, edu-

cated at Glasgow university, and became a civil engineer on the government rlys. in Victoria in 1854. In 1868 he entered the legislative assembly of Queensland and was minister of public works, 1874–79, and premier, 1879–83. In 1888 he formulated a programme for a national party and once more assumed the premiership. A long dispute with the governor regarding the prerogative of mercy was settled in favour of M'Ilwraith. In 1890 he joined Griffith in defeating the government and became treasurer. He was again premier in 1893, after which he retired. Knighted in 1882, he died in London, July 17, 1900.

**Macintosh, Charles** (1766–1843). British chemist and inventor. Born Dec. 29, 1766, he early took an interest in science, and at 20 entered a sal ammoniac manufactory. In 1786 he took up the manufacture of sugar of lead, in 1797 he opened the first Scottish alum works, and two years later was the inventor, with Charles Tennant, of bleaching powder, out of which a large fortune was made. Macintosh invented a process of conversion, by the use of carbon gases, of malleable iron to steel, which was much quicker than the concentration process then in use. He worked out the hot blast process in conjunction with Neilson. But despite his important researches in chemistry, Macintosh's name is inevitably linked with the invention of waterproof fabrics, for which he took out a patent in 1823. Elected F.R.S. in that year, he died July 25, 1843.

**MacIvor, Flora.** Character in Scott's novel *Waverley*, devoted, like her brother, Fergus, to the Jacobite cause. A friend of Rose Bradwardine, she refuses the suit of Edward Waverley, and after her brother's execution retires to a convent in Paris.

**Mack, Karl** (1752–1828). Austrian soldier, in full Freiherr Karl Mack von Leiberich. Born Aug. 25, 1752, he entered the army in 1770, and served in the short war of the Bavarian succession and against the Turks, holding a position on the staff. In and after 1792 he fought against France, chiefly in the Netherlands, and rose to be field-marshal. In 1798 he was put in command of the troops of the king of Naples, but he could do nothing with them and was made prisoner by the French, soon escaping. Having been appointed quartermaster-general, he led the army assembled in Bavaria to oppose the French. The campaign

was badly conducted, and ended in the surrender of Mack and a large force at Ulm, Oct. 20, 1805. He died Oct. 22, 1828. See Ulm. Campaign of.

**Mackail, Denis George** (b. 1892). British novelist. Born June 3, 1892, son of J. W. Mackail (*v.i.*),



Denis Mackail,  
British novelist

he was educated at St. Paul's and Balliol College, Oxford. His first novel, *What Next?* 1920, was succeeded by a number of light, entertaining publications, notable for their humour and adroit characterisation, *e.g.* *Greenery Street*, 1925; *The Fortunes of Hugo*, 1926; *The Flower Show*, 1927; *Summer Leaves*, 1934; *Back Again*, 1936; *Life with Topsy*, 1942; *Our Hero*, 1946.

**Mackail, John William** (1859–1945). A British scholar. From Balliol College, Oxford, he entered the board of education. A brilliant classical scholar, he was professor of poetry at Oxford, 1906–11; president of the Classical Association, 1922–23; and of the British Academy, 1932; also professor of ancient literature in the Royal Academy. His books include *Latin Literature*, 1895, an outstanding critical manual; the standard *Life of William Morris*, 1899; a notable verse translation of Homer's *Odyssey*, 1903–10; *Classical Studies*, 1925; *Studies of English Poets*, 1926; *The Approach to Shakespeare*, 1930; *The Sayings of Christ*, 1938. In 1935 he received the O.M., and he died Dec. 13, 1945.



J. W. Mackail,  
British scholar  
*Elliott & Fry*

**Mackay.** Port of Queensland, Australia. It stands on the Pioneer river, 598 m. N.N.W. of Brisbane, to which it is linked by the main rly. Its harbour facilities have been improved at a cost of £250,000. Exports include sugar, timber, coffee, copper, gold. Pop. 12,600.

**Mackay, Alexander Murdoch** (1849–90). A British missionary. Born at Rhynie, Aberdeenshire, Oct. 13, 1849, and educated as an engineer, he was employed with engineering firms in and near

Berlin. In 1876 he offered his services to the Church Missionary Society, who sent him to work as a lay missionary and mechanic in Uganda, where he remained from 1878 till his death, Feb. 8, 1890.

**MacKay, CHARLES** (1814-89). A Scottish journalist and song writer. Born at Perth, March 27, 1814, he



was educated at the old Caledonian Asylum, Hatton Garden, and at Brussels. Assistant sub-editor of the Morning Chronicle, 1835-44, and editor of the

Glasgow Argus, 1844-47, he was editor of the Illustrated London News, 1852-59, and special correspondent of The Times in New York 1862-65. He died in London, Dec. 24, 1889.

His fame rests chiefly on songs, especially Cheer, Boys, Cheer, of which 400,000 copies were circulated in his lifetime; There's a Good Time Coming, and Tubal Cain. His songs appeared in collected form in 1859 and 1868. He edited collections of Jacobite and Cavalier ballads; compiled One Thousand and One Gems of English Poetry, 1867, and One Thousand and One Gems of English Prose, 1872; and wrote a History of the Mormons, 6th ed. 1857. He also interested himself in Celtic lore and language. Marie Corelli (q.v.) was his illegitimate daughter.

**Mackay, HUGH** (1640-92). A Scottish soldier. The son of Hugh Mackay of Scourie, Sutherland, he entered the English army in 1660. He served in France, his regiment being one of those sent to assist Louis XIV in his wars, and was afterwards in the service of Holland. He refused to return when James II asked for his aid, but was one of the chief generals in the force brought to England by William of Orange. Sent as commander-in-chief to Scotland, he built Fort William and, in spite of his defeat at Killiecrankie, July 27, 1689, reduced the Highlanders to some kind of order. Afterwards he served against the Jacobites in Ireland, being largely responsible for the victory at Aughrim. Mackay was killed at Steinkirk when leading his division in the hottest part of the battle, July 24 (o.s.), 1692.

**Mackay, JOHN WILLIAM** (1831-1902). American financier. Born in Dublin, Nov. 28, 1831, he went

to New York as a child. Proceeding to California in 1851, he amassed money by mining, and discovered the great Bonanza vein in the Comstock lode, Nevada. He part-founded the Bank of Nevada in San Francisco. In competition with the Western Union Telegraph company he organized the Commercial Cable co. in 1884, cheapening the cost of cabling to Europe, and forming later the Postal Telegraph company. He died in London, July 20, 1902.

**Mackaye, PERCY** (b. 1875). American dramatist and poet. Born, New York, March 16, 1875, he was educated at Harvard and Leipzig. After the production (1903) of his comedy, The Canterbury Pilgrims, he devoted himself to writing and to lecturing at universities on the drama. His publications include 13 volumes of poetry; many plays, including Jeanne d'Arc, a tragedy, 1906; Anti-Matrimony, a satirical piece, 1910; A Thousand Years Ago, 1914; ten volumes of masques, and four of grand opera libretti. He became president of the Pan-American Poets' League of N. America, and received a national testimonial on his 70th birthday.

**McKeesport**. Industrial city of Pennsylvania, U.S.A., in Allegheny co., it stands at the junction of the Youghiogheny and Monongahela rivers, 15 m. S.E. of Pittsburgh, and is served by rlys. and airports. It is in the Pittsburgh iron and steel district and a retail market for the Pennsylvanian and West Virginian bituminous coal and gas fields. "Tube City" produces steel tubes, pipes, sheet steel, etc.; there are also meat packing plants. Pop. 55,355.

**McKell, WILLIAM JOHN** (b. 1891). An Australian politician. Born at Pambula, N.S.W., Sept. 26, 1891, he was educated at a state school in Sydney before serving his apprenticeship as a boilermaker and becoming financial secretary of the Boilermakers' Union. At 25 he was elected to the N.S.W. legislative assembly, and in 1920 was minister of justice for the first of several terms. He was called to the bar in 1925, and carried out financial missions to London and New York in 1927. On May 16, 1941, he became Socialist premier and treasurer of his state. In 1947 he was named governor-general of the Commonwealth in succession to the duke of Gloucester.

**McKenna, MARIE** (b. 1892). Belgian nurse, born Marthe Cnockaert, who acted as British secret service agent in the First Great War. While serving, 1915-17, in

a German military hospital at Roulers, she reported German troop movements, helped British prisoners to escape, and effected destruction of German ammunition dumps, etc. She was awarded the French and Belgian Legions d'Honneur, and was mentioned in Haig's despatches. For her nursing work she received the German iron cross. In 1932 she published the story of her adventures, I Was a Spy, later made into a British film. She wrote several other books on spies and spying.

**McKenna, REGINALD** (1863-1943). A British politician and banker. Born July 6, 1863, son



Reginald McKenna,  
British politician  
Russell

of a London merchant, he was educated at King's College, London, and Trinity Hall, Cambridge, where he rowed in the university eight. He was called to the bar in 1887, but forsook the law in 1895 when he became Liberal M.P. for N. Monmouthshire. He was financial secretary to the Treasury, 1905-07, and then joined the cabinet as president of the board of Education. First lord of the Admiralty in 1908, he successfully supported its demand for more dreadnoughts.

He was home secretary from 1911 until made chancellor of the exchequer in Asquith's war-time coalition ministry of 1915. Though normally a stern free-trader, he increased the duties on tea, sugar, coffee, and other imported commodities, taxed entertainments and matches, and imposed the so-called McKenna duties on imported motor cars, watches, etc. He left office with Asquith in Dec., 1916, and in the 1918 election lost his seat. From 1919 McKenna was chairman of the London Joint City and Midland (now Midland) Bank, and in 1928 published Post-War Banking Policy. This last Gladstonian Liberal died Sept. 6, 1943.

**Mackennal, SIR BERTRAM** (1863-1931). Australian sculptor. Born in Melbourne, he was a son of a Scottish sculptor who had emigrated. Coming to England in 1883, he entered the R.A. schools, but soon went to Paris to study. During 1889-91 he was engaged on the decoration of the government house at Melbourne. His Circe, 1893, exhibited at the Salon and the R.A., won public recognition. Among later works were statues of Queen Victoria for Lahore,

Blackburn, and Australia; a portrait bust of Sarah Bernhardt; the Earth and the Elements, and Diana, two imaginative pieces bought by the Chantrey bequest for the Tate Gallery; coinage designs for George V (the sculptor's initials being faintly discernible at the base of the king's neck); the national memorial to Gainsborough: the house of commons war memorial; and memorials to Edward VII in London, Calcutta, Melbourne, and Adelaide. He was knighted in 1921, made R.A. next year, and died Oct. 10, 1931.

**Mackensen, August von** (1849–1945). A German soldier. The son of a land agent in Saxony, he



August von Mackensen, German soldier

was born Dec. 6, 1849. Educated at the Torgau gymnasium and the university of Halle, he entered the army as a private in 1869. By 1898 he was A.D.C. to the Kaiser

and by 1908 was general of cavalry and commander of the 17th army corps. When the First Great War broke out, he was prominent in the second attack on Warsaw.

In reality generalissimo of all the Austro-German forces in the S., Mackensen carried out the great drive in 1915 against the Russians which began with the Dunajetz battles and ended in the reconquest of nearly all Galicia. He then cooperated in the campaign that compelled the evacuation of Warsaw by the Russians. Made a F.M., he overran Serbia, and led the army that subjugated Rumania by Jan., 1917. Remaining there until the armistice of 1918, he was in effect dictator. He retired in 1920, but lived until Nov. 8 1945.

His third son, Everhard von Mackensen (b. Sept. 24, 1889), served on the general staff in the First Great War, and as a corps and army commander (col.-gen.) in the Second. Captured in Italy, he was tried in 1946 by a British tribunal as a war criminal and, with Lt.-Gen. Maeltzer, found guilty of being concerned in the murder of 335 Italians (see Ardennine Caves). The sentence, death by shooting, was commuted to life imprisonment, July 5, 1947.

**Mackenzie.** River of Canada. It has its source in the headwaters of the Athabaska river, issuing from the Yellowhead and Athabaska passes of the Rocky

Mountains. As the Athabaska it enters Athabaska Lake, which it leaves as the Slave river, and after 20 m. is joined by its great tributary, the Peace river. Entering the Great Slave Lake, it emerges thence as the Mackenzie, and is navigable onwards to its outlet, through a wide delta by Fort Macpherson, at Mackenzie Bay, a distance of 1,120 m. Its direction is almost continuously N. Never less than 2 m., in some places it attains a width of 3 to 4 m. The lower river is frozen in winter from Nov. to May; as the ice melts first in the upper waters the lower course is flooded in the early summer. The total length is 2,500 m., and the basin area 682,000 sq. m. Other tributaries are the Liard, Great Bear, and Peel. Fish abound in the Mackenzie, and its valley and banks contain coal-seams, salt deposits, petroleum, natural gas, and tar-springs. See Athabaska; Peace; Slave.

**Mackenzie.** Name of an area of Canada that had, 1895–1911, the status of a district. Named after the explorer mentioned below, it was part of the territory purchased by the Dominion from the Hudson's Bay Co. It lies between the Arctic Ocean on the N. and Alberta and Saskatchewan on the S. To the W. is Yukon and to the E., Keewatin. Mackenzie is now a division of N.W. Territories. See North-West Territories.

**Mackenzie, Sir Alexander** (c. 1755–1820). British explorer, born at Inverness. He entered service



Sir A. Mackenzie, British explorer After Lawrence

of the North-West Fur Company of Canada in 1779 and speedily gained a knowledge of topography. In 1789 he was dispatched from Chippewyan, Lake Athabaska, on an expedition to explore the unknown N.W., in the course of which he discovered the outlet of the river which bears his name, and penetrated to the Arctic Sea. In 1792 he set out to reach the Pacific, and after nine months of exceptional hardship succeeded and returned to Chippewyan. In 1801 he published an account of his explorations. He was knighted in 1802 and died near Dunkeld, Perthshire, March 11, 1820.

**Mackenzie, Alexander** (1822–92). Canadian politician. Born near Dunkeld, Jan. 28, 1822, he

emigrated to Canada when 20. At first he worked as a mason, but later set up for himself as a builder at Sarnia, Ont., and became interested in local politics. In 1861 he entered the legislature of Canada as a Liberal. In 1867 he was sent to the Dominion house of commons, where he led the opposition, being simultaneously treasurer of his own province. When Macdonald's government was defeated at the general election of 1873, Mackenzie became the Dominion's second premier, but in 1878 was driven from power by the advocates of a policy of protection. He resigned the party leadership in 1878, but remained in the house until his death at Toronto, April 17, 1892.

**Mackenzie, Sir Alexander Campbell** (1847–1935). Scottish musician. Born in Edinburgh,



A.C. Mackenzie Russell

Aug. 22, 1847, he was the most distinguished of a family of Scottish musicians extending over four generations. He studied the violin in Germany, but in 1862 returned to the Royal

Academy of Music, soon gaining the king's scholarship. After living some years in Florence, he was appointed principal of the R.A.M. in 1888 and retired in 1922. For several years he conducted the concerts of the Philharmonic Society in London. He was knighted in 1895, and died April 28, 1935. His most successful works are those national in character like *The Cottar's Saturday Night*, Scottish rhapsodies, Scottish piano concerto, and the overture *Britannia*.

**Mackenzie, (Edward Montague) Compton** (b. 1883). British writer. Son of Edward, and brother of Fay Compton (q.v.), he was born at W. Hartlepool, Jan. 17, 1883, and educated at S. Paul's school and Magdalen College, Oxford.



Compton Mackenzie, British writer

He made his reputation as a novelist with *Carnival*, 1912 (dramatised the same year), and achieved popular success with *Sinister Street*, 1913–14; *Guy and*

Pauline, 1915; Sylvia Scarlett, 1918, and a sequel, Sylvia and Michael, 1919. During the First Great War he was military control officer at Athens, 1916, and director of the Aegean intelligence service, 1917. His experiences in Greece inspired *Extremes Meet*, 1928; *Gallipoli Memories*, 1928; *First Athenian Memories*, 1932, and *Greek Memories*, 1932 (withdrawn after prosecution under the Official Secrets Act, but reissued in 1940). Other novels included *Extraordinary Women*, 1928; *The Darkening Green*, 1934; *The Four Winds of Love: The East Wind*, 1937; *The South Wind*, 1937; *The West Wind*, 1940; *West to North*, 1940; *The North Wind*, 1944; *North to East*, 1945. Later publications included *The Vital Flame*, 1946; *Whiskey Galore*, 1947.

Rector of Glasgow university, 1931-34, he was literary critic to the *Daily Mail*, 1931-35, and edited *The Gramophone*. He had a passionate devotion to islands, and purchased and lived on Herm (Channel Islands) before the Second Great War, later residing on the Isle of Barra, Hebrides, until 1947.

**Mackenzie, Sir George** (1836-91). A Scottish lawyer. Born at Dundee, he became king's advocate in 1677.



Sir G. Mackenzie,  
Scottish lawyer  
After Kneller

An adroit lawyer and man of letters, he ruthlessly pursued the Covenanters, applying the law relentlessly and ingeniously, and boasting that he had never lost a case for the king. But although so harsh in the discharge of his duties and overbearing in temperament that he became known as Bloody Mackenzie, he nevertheless observed the strictest legal formality. In his *Vindication* he defended the use of torture as a means of obtaining evidence; and he employed it with savage thoroughness. He inaugurated the period of persecution known in Scotland as the Killing Time. He died at Westminster, May 8, 1691, and was buried in Greyfriars churchyard, Edinburgh. *Consult* Sir George Mackenzie, King's Advocate, his *Life and Times*, A. Lang, 1909.

**Mackenzie, Henry** (1745-1831). A Scottish writer. Born in Edinburgh, and educated there, he first took up the law as a profession. His chief interest, however, was in literature, and during his long

life he was intimate with all the literary celebrities of his time. The *Man of Feeling*, 1771, written under the influence of Sterne, enjoyed great vogue in its time. It furnished the nickname by which its author has ever since been known. Mackenzie, who was one of the first



Henry Mackenzie,  
Scottish writer

to recognize the genius of Burns, died Jan. 14, 1831.

**Mackenzie, Sir James** (1853-1925). British physician. Educated at Edinburgh university, and Vienna, he was in practice at Burnley from 1879 till 1907. In 1907 he settled in London as a consulting physician, and made a European reputation by his work and writings. In 1915 he was knighted and elected F.R.S. His writings include *The Study of the Pulse*, 1902; *Diseases of the Heart*, 1907; *The Future of Medicine*, 1919. He died Jan. 26, 1925. *Consult* Life, R. McNair Wilson, 1926.

**Mackenzie, Sir Morell** (1837-92). British surgeon. Born at Leytonstone, Essex, July 7, 1837, he took his M.D. degree at the London University, 1862, and winning the Jacksonian prize of the Royal College of Surgeons in 1863, with an essay On the Pathology



Sir Morell Mackenzie

of the Diseases of the Larynx, devoted the rest of his professional life to that study. He helped to found the hospital for diseases of the throat in King Street, Golden Square. In 1887 his diagnosis of the illness of the German crown prince, later Emperor Frederick III (*q.v.*), roused international controversy. Mackenzie wrote *Frederick the Noble*, 1888. He was knighted in 1887. A pioneer of the use of the laryngoscope in England, his most important work is *Manual of Diseases of the Throat and Nose*, 2 vols., 1880-84. He died Feb. 3, 1892. *Consult* Lives, H. R. Haws, 1893; R. S. Stevenson, 1946.

**Mackenzie, Samuel** (1785-1847). British painter. Born Dec. 28, 1785, he worked as a herd-boy and as a superintendent of stonehewers in the N. of Scotland. At the age of 25, when he was em-

ployed by a marble-cutter in Edinburgh, he came under the influence of Raeburn, and studied portrait-painting in his studio. The dukes of Gordon and Roxburgh commissioned a number of works from him, and Lord Brougham was among his sitters. He was one of the original members of the Scottish Academy, and exhibited regularly from 1829 to 1846, showing mainly portraits. A man of wide culture, he died in Edinburgh, Jan. 23 1847.

**Mackenzie, Sir Thomas** (1854-1930). Scottish-born New Zealand statesman. A native of Edinburgh, he was educated at Otago, N.Z. He entered the legislature in 1887, and held various government posts, being prime minister in 1912. Later he was high commissioner in London, retiring in 1920. He was knighted in 1916, represented his country at the peace conference, 1919, and in 1921 joined the New Zealand legislative council. He died Feb. 14, 1930.

**Mackenzie, William** (1791-1868). British surgeon. Born April 29, 1791, the son of a muslin manufacturer, he was educated at Glasgow grammar school and university, and studied medicine in Glasgow, London, and on the continent. He specialised in ophthalmic surgery, was one of the founders of the Glasgow eye infirmary, 1824, and in 1843 was among the surgeons who received the newly instituted fellowship of the Royal College of Surgeons of England *honoris causa*. In 1838 he was appointed surgeon-oculist to the queen in Scotland. His *Practical Treatise on the Diseases of the Eye*, 1830, was the standard text-book until the invention of the ophthalmoscope in 1851, revolutionised the diagnosis and treatment of intraocular disease. He wrote several other treatises on the surgery of the eye. He died at Glasgow, July 30, 1868.

**Mackenzie, William Lyon** (1795-1861). Scottish-born Canadian politician. Born near Dundee, March 12, 1795, he emigrated to Canada in 1820. In 1824 he started a paper, *The Colonial Advocate*, in order to focus the discontent felt in Upper Canada at the arbitrary acts of a small controlling clique.

Meanwhile, in 1828, Mackenzie had been elected to the legislature,



William L. Mackenzie,  
Canadian politician

but he was expelled and, in spite of repeated re-elections, was not allowed to sit until 1834, when his party secured a majority in the house. Defeated in 1836, Mackenzie began to advocate republican doctrines, and spoke of securing his ends by force, founding for this purpose a new paper, *The Constitution*. He was soon in touch with the rebels in Lower Canada, and in Nov., 1837, he set up a provisional government. Collecting a force, he marched towards Toronto, but this rising was soon crushed, and he fled to the U.S.A. In 1839 the U.S.A. authorities put him on his trial, and he was sentenced to imprisonment. In 1849 he returned to Canada, and in 1851 re-entered the legislature but resigned in 1858, and died Aug. 29, 1861. *See Canada; consult Life and Times, C. Lindsey, 1862, abridged ed. 1909.*



Mackerel. Specimen of the fish which forms a staple article of food  
*Ozley Graham*

**Mackerel.** Fish of the family Scombridae, which, including the tunny, are all distinguished by their rounded bodies, very small scales, and the form of the dorsal fins. They are found in most parts of the world, three species occurring in Europe, including the common mackerel (*Scomber scombrus*). It varies in length from 14–18 ins. and is readily recognized by its bluish-green back, barred with black, and its silvery under-side. Its range extends from Norway to the Canaries and includes the Mediterranean.

Around the British coasts the mackerel migrates in a remarkable manner. In winter it is found in the Atlantic at some distance from shore; but about May it approaches the land in large schools, and is abundant off the Cornish coast until July. It reappears in Sept. for about a month, but is virtually absent from Nov. till the following spring. Off the E. coast of England the schools appear in May–June, and again in Sept.–Oct. It is believed that the spring visit is for the purpose of spawning, and the autumn one for pursuing swarms of fry.

The food of the mackerel in spring consists mainly of minute crustaceans, but in autumn of young sprats, pilchards, and sand eels. Spawning takes place in the spring and early summer, the

female depositing from 300,000 to 650,000 eggs, which float at the surface of the sea. These hatch in about a week, according to the temperature of the water; and it is believed that the fish become adult at about three years. Mackerel fishery is conducted in seine and drift nets, and the catch is often enormous. *See Fish; Fisheries.*

**Mackerel Sky.** Name popularly applied to a sheet of high cloud consisting of small globular masses or white flakes arranged in patterns. In weather lore a mackerel sky is associated with changeable weather, but it has really little significance as an aid to forecasting. *See Cloud.*

**Mackinac.** Island and city of Michigan, U.S.A., in Mackinac co. The city, which is c. 250 m. N.W. of Detroit, stands on the N.E. shore of Mackinac Island, and was chartered as a city in 1900. Pop. 500.

The island, 3 m. long and 2 m. wide, lies at the N.W. end of Lake Huron at the entrance to the Straits of Mackinac, a navigable channel 4 m. wide connecting Lakes Huron and Michigan, and separating the upper and lower pens. of Michigan state. Formed of rock, free from swamps, and naturally beautiful, the island is a popular summer resort; 95 p.c. of it is a state park. The principal Great Lakes steamers serve it. No motor cars are permitted on the island.

A British garrison occupied Fort Mackinac on the mainland in 1761. The fort was removed to the island in 1780–81, becoming the defence stronghold of the North-West Territory. The British captured it in 1812, withdrawing only after the conclusion of the treaty of Ghent, Dec., 1814. John Jacob Astor's American Fur co., which had a monopoly of the fur trade in the Great Lakes region, was centred here 1817–34. *Pron. Mack-in-aw.*

**McKinley, Mount.** Peak of the Alaskan range, loftiest in N. America. On the Sushitna-Kuskowim divide, it rears to an alt. of 20,464 ft.

**McKinley, William** (1843–1901). President of the U.S.A. Born at Niles, Ohio, Jan. 29, 1843, of Scottish-Irish descent, he fought in the Civil War, and after being called to the bar, 1867, settled

for the rest of his life at Canton, Ohio. Republican member of congress 1877–91, as chairman of the ways and means committee (1890) he passed the protectionist tariff known as the McKinley Act. Having twice served as governor of



*W. McKinley*

Ohio, he was elected to the presidency in 1896, defeating W. J. Bryan, who stood as a Democrat. McKinley had modified his financial opinions, and in this contest appeared as an opponent of Bryan's free silver policy and a supporter of the gold standard.

The chief events of his term were the war with Spain, the annexation of Hawaii, and the settlement of the control of Samoa. Re-elected in 1900, he was shot, Sept. 6, 1901, by Czolgosz, a Polish-American anarchist, at the Pan-American Exposition at Buffalo, and died on Sept. 14. During his presidency relations between Great Britain and the U.S.A. had been cordial, while the participation of American forces in the expedition which went to Peking to suppress the Chinese Boxers in 1900 marked its first appearance as a world power. Theodore Roosevelt, vice-president, stepped up to the White House on McKinley's death. *See Buffalo (city); Spanish-American War; consult Lives, J. W. Tyler, 1901; E. T. Roe, 1913.*

**Mackintosh, Sir James** (1765–1832). A British philosopher and historian. Born at Alldourie on Loch Ness, Oct. 24, 1765, he attended lectures at King's College, Aberdeen, and studied medicine at Edinburgh. Having graduated in 1787, he removed to London, but abandoned medicine for the law, and was called to the bar in 1795. In 1791 he had published a justifi-



Mount McKinley. The snow-clad peak in central Alaska, near the Arctic circle



cation of the French Revolution, *Vindiciae Gallicae*, in reply to Burke, for which the national assembly gave him the title of a French citizen. In 1803 he defended Peltier, a French refugee charged with having labelled Napoleon.

*James Mackintosh*  
After Laurence

During 1804–11 he held important positions in Bombay, and then as a Whig entered the house of commons. He was professor of law at the East India College, Haileybury, 1818–24. He died May 30, 1832. A representative of the Scottish school of philosophy, in his *Dissertation on the Progress of Ethical Philosophy*, 1831, Mackintosh advocated a modified form of utilitarianism. He also wrote *History of the Revolution in England*. *Consult* Life, R. J. Mackintosh, 1836.

**Macklin, CHARLES** (c. 1697–1797). Irish actor and dramatist, whose real name was McLaughlin. After some years with a strolling company, he made his first appearance at Drury Lane, under the name of Mechlin, as Brazen in *The Recruiting Officer*, Oct. 31, 1733.



*Charles Macklin*  
C. 1733

He was the original Colonel Bluff in Fielding's *Intriguing Chambermaid*, and took the part of Squire Badger in the same author's *Don Quixote* in England. He acted at The Haymarket and Covent Garden, also in Dublin, and achieved enormous success as Shylock, Peaschum, Polonius, and Iago were among his other parts, which also included Sir Archy McSarcasm and Sir Pertinax McSycophant in his own farce, *Love à la Mode*, 1759, and comedy, *The Man of the World*, 1781. Notorious for his quarrels and lawsuits, he retired in 1789, and died July 11, 1797, being buried in S. Paul's, Covent Garden. Macklin was an excellent comedian, who set his face against "gagging," an excellent if exacting teacher, and a capable stage-manager.

**MacLagan, WILLIAM DALRYMPLE** (1826–1910). British prelate. Born in Edinburgh, June 18, 1826, the son of a doctor, he was educated

at the university there and entered the Indian army in 1847. Leaving in 1852, he went to Peterhouse, Cambridge, was ordained in 1856, and after serving as a curate was made vicar of S. Mary's, Newington, in 1869, and of S. Mary Abbots, Kensington, 1875–79. Next he was made bishop of Lichfield, and in 1891 archbishop of York. He died Sept. 19, 1910. MacLagan wrote the hymn, *The Saints of God*. *See* Life, F. D. How, 1911.

**Maclaren, ALEXANDER** (1826–1910). British divine. Born in Glasgow, Feb. 11, 1826, he began his ministry at Portland Chapel, Southampton, in 1846. Ten years later he was called to the pastorate of Union Chapel, Manchester, where the eloquence of his preaching made his name widely known, together with his works on biblical subjects. In 1905 he presided over the Baptist congress. He died May 5, 1910.

**Maclaren, ARCHIBALD CAMPBELL** (1871–1944). English cricketer, born in Manchester, Dec. 1, 1871. From a preparatory school at Elstree he went to Harrow, where he made his name as a cricketer. In 1890 he began to play for Lancashire, and in 1894 was made captain. He was a member of the team that went to Australia in 1894–95, and captain of those that went in 1897–98 and in 1901–02. In England he played against the Australians in five of their tours, being captain in 1899, 1902, and 1909. The score of 424 made by him at Taunton against Somerset in July, 1895, stands as a record in English first-class cricket. He died Nov. 17, 1944.

**Maclaren, IAN** (1850–1907). Pseudonym of John Watson, Scottish author and divine. Born at Manningtree, Essex, Nov. 3, 1850, and educated at Stirling grammar school and Edinburgh university, he entered the

ministry of the Free Church of Scotland at Edinburgh. During 1875–80 he was minister at Logiealmond and at S. Matthew's, Glasgow. In 1880 he went to

Sefton Park Presbyterian Church, Liverpool, which for 25 years, through his preaching and personality, was one of the most influential of its denomination in England. In 1894 Watson published *Beside the Bonnie Brier Bush*, which brought him fame as a delineator of Scottish life and character, though critics charged him with sentimentality and idealisation. The same faults are to be found in *The Days of Auld Lang Syne*, 1895, and *Kate Carnegie*, 1896. Watson also wrote on theological subjects under his own name, notably *The Mind of the Master*, 1896, an unorthodox study of Jesus Christ. He died at Mount Pleasant, Iowa, May 6, 1907.

**MacLaurin, COLIN** (1698–1746). Scottish mathematician. Born at Kilmodan, Argyllshire, and educated at Glasgow university, he took his degree in mathematics at 15, and in 1717 was made professor of mathematics at Marischal College, Aberdeen. In 1719 he was made a fellow of the Royal Society, and in 1725 professor of mathematics at Edinburgh. In 1740 he was awarded, with Bernoulli and Euler, the French Academy prize for a dissertation on the tides. He took part against the Young Pretender, 1745, in the organization of the defences of Edinburgh, and as a result of privation died at York, June 14, 1746.

MacLaurin was one of the most brilliant mathematicians of the 18th century, ranking next to Newton. He wrote on curves, the motion of fluids and attractions, and was the author of the important theory in the differential calculus known by his name, by means of which a function of one variable may be expanded in terms of ascending integral powers of the variable. He published *Geometrical Organica*, 1735 (in *Philosophical Transactions*); *Treatise on Fluxions*, 1742, in defence of Newton against Bishop Berkeley; and an unfinished *Treatise on Algebra*, 1748.

**MacLay, JOSEPH PATON MACLAY, BARON** (b. 1857). British shipowner. Born Sept. 6, 1857,



Baron MacLay,  
British shipowner  
Russell

he was educated at Glasgow, and entered the shipping industry, ultimately becoming head of MacLay and MacIntyre, shipowners of Glasgow. In 1916 he was



appointed shipping controller, and occupied this post until its abolition in 1921. He was a member of the war cabinet in 1918. Macley was created a baronet in 1914 and a peer in 1922. He held several civic offices in Glasgow.

**Maclean, Sir Donald** (1864–1932). British politician. The son of John Maclean of Tiree, he was trained as a solicitor and began to practise in London. In 1906 he was elected Liberal M.P. for Bath. In 1910 he was returned by Peebles and Selkirk, and in 1911 he was made deputy chairman of committees. All the Liberal leaders lost their seats at the general election of 1918, and he was chosen as leader by the remnant of the party in parliament, discharging the duty until the return of Asquith to parliament in 1920. In 1916 he was made a privy councillor, and in 1917 he was knighted. He died Jan. 15, 1932.

**Maclean, Kaïd Sir Harry Aubrey de** (1848–1920). British soldier. Born June 15, 1848, he entered the army and, stationed in Gibraltar in 1876, he crossed to Morocco, was introduced to the sultan Mulai Hassan, and entered his service, becoming instructor



Kaïd Maclean,  
British soldier  
Downey

to the Moroccan army and principal counsellor of the sultan. Adopting Moorish habits and customs, he remained loyal in his British sympathies, and in 1901 was knighted for his services to the empire. In 1907 he was captured by Raisuli, and remained a prisoner until ransomed for £20,000 seven months later. He died at Tangier, Feb. 4, 1920.

**MacLeish, Archibald** (b. 1892). American poet. Born May 7, 1892, and educated at Yale, he was instructor in government at Harvard, 1919–21, and from 1923 to 1930 devoted himself to literature. Editor of *Fortune*, 1929–38, he became librarian of congress in 1939 and during 1944–45 he was assistant secretary of state. His publications included *The Happy Marriage*, 1924; *Nobodaddy*, 1925; *The Hamlet of A. MacLeish*, 1928; *Conquistador* (awarded Pulitzer prize), 1932; *A Time to Speak*, 1941; *A Time to Act*, 1943. Of his radio verse dramas the best-known included *The Fall of the City*, 1937; *Air Raid*, 1938.

**McLennan, John Ferguson** (1827–81). Scottish sociologist and anthropologist. Born at Inverness, October 14, 1827, he studied at Aberdeen and Cambridge, was called to the Scottish bar, 1857, and became parliamentary draughtsman for Scotland, 1871. His *Primitive Marriage*, 1865, in which he first discussed the custom of exogamy, inaugurated modern research into the evolution of kinship and marriage. This and other essays were collected under *Studies in Ancient History*, 1876. McLennan died June 14, 1881.

**MacLeod, Scottish clan.** It was divided mainly into the MacLeods of Lewis, the branch of Torquill, and the MacLeods of Harris, the branch of Tormod; both branches tracing their ancestry to a remote Laigh the Strong. There were other branches, the MacLeods of Raasay, in Inverness-shire; Cadboll and Glennies, in Ross-shire; and Dunvegan, on the W. coast of Skye. See *Clan*; *Dunvegan*. *Pron.* Mac-loud.

**MacLeod, Fiona.** Pen-name under which William Sharp (*q.v.*) wrote a number of Celtic romances.

**MacLeod, Henry Dunning** (1821–1902). British economist. Born in Edinburgh, March 31, 1821, the son of Roderick MacLeod, M.P., lord-lieutenant of Cromarty, he was educated at Edinburgh academy, Eton, and Trinity College, Cambridge, and in 1849 was called to the bar. His main interest was in economic questions, and he had already, in 1847, framed a successful and popular scheme of poor law relief, first employed on his father's estate, and then elsewhere in Scotland. His writings began with *The Theory and Practice of Banking*, 1856. In 1858 appeared his *Elements of Political Economy*, which, like the earlier work, went into several editions. He started a *Dictionary of Political Economy* and wrote *The Theory of Credit*, 1889–91. He died July 16, 1902.

**MacLeod, John James Richard** (1876–1935). Scottish physiologist. Born near Dunkeld, Perthshire, Sept. 6, 1876, he was educated at Aberdeen and at Leipzig university. From 1901 to 1903 he held the Mackinnon research scholarship of the Royal Society, and from 1903 to 1918 was professor of physiology at Cleveland, Ohio, subsequently occupying similar positions at Toronto university and at Aberdeen. His most important work was on the nature of the control of the metabolism of carbohydrates in the animal body,

and, together with Dr. Banting, with whom he shared the Nobel prize for medicine in 1923, he achieved fame as one of the discoverers of insulin. Elected F.R.S. in 1923, he was a member of the medical research council, 1929–33. He died at Aberdeen, March 16, 1935. His numerous works include *Practical Physiology*, 1903; *Diabetes*, 1913; and *Carbohydrate Metabolism and Insulin*, 1926.

**MacLeod, Norman** (1812–72). Scottish divine and author. He was born at Campbeltown, Argyllshire, June 3, 1812, and was educated at Glasgow and Edinburgh. Minister at various Scottish churches from 1838 to 1872, he became chaplain to Queen Victoria in Scotland in 1857. Editor of *Good Words*, 1860–72, he was the author of numerous sermons, travel sketches, and stories, including *Reminiscences of a Highland Parish*, 1867. He died June 16, 1872, at Glasgow, where his memory is perpetuated by a statue and by the MacLeod Memorial Missionary Institute.



Norman MacLeod,  
Scottish divine

**MacLise, Daniel** (1806–70). A British painter. Born at Cork, Jan. 25, 1806, the son of a Scotsman,



Alexander McLeish, he entered a bank, which he left soon after to become a student at the Cork Institute. He early attracted attention by a pencil drawing of Sir Walter Scott in a Bookshop at Cork, 1825, now in the Victoria and Albert Museum. He practised portraits, mostly in pencil, until able to proceed to London, where he entered the R.A. schools in 1828 and gained a gold medal for his *Choice of Hercules*, 1831. He was elected A.R.A., 1835, and R.A. in 1840. MacLise was one of six artists chosen to paint decorations for the house of lords, and began work on the two gigantic historical paintings, *The Meeting of Wellington and Blücher After Waterloo*, finished 1859, and *The Death of Nelson*, finished 1864.

In 1866 he declined the presidency of the Royal Academy. He drew and painted many portraits,

After E. M. Ward, R.A.

including one of his friend, Charles Dickens, 1839, now in the National Portrait Gallery, and one of John Constable. He illustrated books, such as Moore's Irish Melodies. His chief pictures are Malvolio and the Countess, 1840, and The Play Scene in Hamlet, 1842, both in the Tate Gallery; Puck Disenchanting Bottom (R.A.), 1831; Snap Apple Night (R.A.), 1833; Merry Christmas in the Baron's Hall, National Gallery of Ireland. He died at Chelsea, Apr. 25, 1870. *See* ill. Ainsworth, W. H.; Campbell, T.; Caxton. *Consult* Memoir, W. J. O'Driscoll, 1871; The MacLise Portrait Gallery, W. Bates, 1883.

**Macmahon, Marie Edmé** PATRICE MAURICE (1808-93). French soldier and politician. Born at Sully, Loiret, June 13, 1808, he was a member of a family exiled from Ireland for its loyalty to James II. He entered the army in 1827, and saw service in Algeria. He commanded a division in the Crimean War, and in Italy was responsible for the victory of Magenta, being made a marshal and duke of Magenta as a reward. During 1864-70 he was gov.-gen. of Algeria.



Marshal Macmahon,  
French soldier

In the Franco-Prussian War he held a high command, but he was defeated at Wörth, and driven back to Toul. He then took charge of a new force, which he led to Sedan, only, however, to be wounded and taken prisoner. Released at the peace, he was given the task of crushing the communist rising. In May, 1873, he became president of the republic, in succession to Thiers. By no means a convinced republican, he was suspected of favouring a restoration, and was too conservative for many of his countrymen. A crisis in 1877 was not made less acute by his unyielding attitude, and after another crisis in 1879 he resigned. He died Oct. 17, 1893.

**McMaster University.** Educational establishment at Hamilton, Canada. Founded in 1887, it was endowed by W. McMaster (1811-87). It sprang from a union of the Baptist college at Toronto with a college at Woodstock. A Baptist university, it specialises in training men and women for evangelistic and missionary work, but there are no religious tests for students. In 1880 Woodstock College was separated from it, but Brandon Col-

lege, Manitoba, is affiliated to it. The university has a large library, laboratories, and residential halls for men and women. Originally established at Toronto, the university was transferred to Hamilton in 1930.

**Macmillan, Hugh Pattison** MACMILLAN, BARON (b. 1873). British lawyer. He was born Feb. 20, 1873, and educated at Edinburgh and Glasgow universities. He became an advocate in 1897, and took silk in 1912. In 1924 he became lord advocate for Scotland in the



Lord Macmillan  
British lawyer

Labour ministry, and was made a privy councillor. He acted as chairman of a series of commissions, including the coal-mining industry dispute, 1925; the British Pharmacopoeia, 1926; finance and industry, 1929, which issued the much-discussed Macmillan report; income-tax law codification, 1930; and Canadian banking, 1933. He was a lord of appeal in ordinary, from 1930 to 1939 and from 1940 to 1947; during 1939-40 he was minister of Information, the first to hold that position in the Second Great War, during the difficult formative months of the ministry, when it was the target for much criticism. Among many positions he occupied were chairman of the Pilgrim trust; member of the Carnegie trust for the universities of Scotland; chairman of the court, University of London, 1929-43; chairman of C.E.M.A., 1941-42, and a trustee of the British museum, Soane museum, and national library of Scotland. He received a life barony in 1930.

**Macmillan, Daniel** (1813-57). British publisher. Born at Upper Corrie, Arran, Sept. 13, 1813, he



Daniel Macmillan,  
British publisher  
After L. Dickinson

was educated at Irvine, and after an apprenticeship to a bookseller moved, in 1831, to Glasgow. Two years later he obtained employment at Cambridge. In 1843 he set up in business with his brother, Alexander (1818-96), as a bookseller in London, shortly afterwards returning to Cambridge. There, in 1843, he began publishing books of a religious and scientific nature. Success induced him to extend his field, and in

1855 he published *Westward Ho!* followed two years later by *Tom Brown's School Days*. He died June 27, 1857. *Consult* Life, T. Hughes, 1882; Life of Alexander Macmillan, C. L. Graves, 1910. *See* Macmillan & Co. Ltd.

**Macmillan, Harold** (b. 1894). British politician. A member of the publishing family, he was educated at Eton and Balliol, and served in France during the First Great War. He was A.D.C. to the governor-general of Canada, 1919-20, but resigned to devote himself to politics, and became Conservative M.P. for Stockton-on-Tees in 1924. He was defeated in 1929, but re-elected in 1931, retaining the seat until 1945. He was parliamentary secretary to the ministry of Supply from 1940 to 1942, and was then appointed under-secretary for the Colonies. In Dec., 1942, he was sent as minister-resident to French N. Africa, where a confused situation had developed after the assassina-



Harold Macmillan,  
British politician

tion of Darlan, and remained there until 1945. In Dec., 1944, he visited Athens in an effort to effect an agreement between the Greek government and the E.A.M. Air minister in the "caretaker" government of 1945, he lost his seat at the general election. Elected the same year by Bromley at a by-election, he retained the seat in 1950. Among his publications are *Reconstruction: A Plea for a National Policy*, 1933; *The Middle Way*, 1938; *Economic Aspects of Defence*, 1939.

**McMillan, Margaret** (d. 1931). British educationist. Born in New York, she spent her childhood in Inverness, and was educated there and in Switzerland. A member of the Bradford school board, 1894-1902, she pioneered the cause of physical education, and successfully campaigned for medical inspections in schools. Among the school clinics started by her is the Deptford health centre, the largest in the U.K. In 1914 she founded the first open-air nursery school. She also founded Rachel McMillan college for training infants' teachers as a memorial to her sister.



Margaret McMillan,  
British educationist

She was made C.B.E. in 1917, and C.H. in 1930. She died March 29, 1931. In June, 1947, a Margaret McMillan memorial fund was opened by the prime minister. *Consult* Life, A. Mansbridge, 1932.

**Macmillan & Co., Ltd.** British publishing house founded at Cambridge, 1843, by Daniel and Alexander Macmillan. For a short time there was a branch in Aldersgate Street, but the London business proper was founded in Henrietta Street, Covent Garden, in 1858. Removal to Bedford Street took place in 1863, larger premises near being taken in 1872, and the present premises in St. Martin's Street were occupied in 1897, two years after the formation of the limited company. With educational and theological works as leading features, the names on the Macmillan lists, from F. D. Maurice, Lewis Carroll, and T. H. Huxley to Hardy, Kipling, Yeats, represent all branches of literature. *Consult* The House of Macmillan, C. Morgan, 1943.

**Macmurray, JOHN** (b. 1891). Scottish philosopher. He was born at Maxwellton, Kirkcudbrightshire, Feb. 16, 1891, and educated at Robert Gordon's College, Aberdeen, Glasgow university and Balliol, Oxford. Macmurray served in the First Great War and was appointed lecturer in philosophy, Manchester university, 1919. He was fellow, classical tutor and Jowett lecturer in philosophy, Balliol College, 1922-28, and Grote professor of philosophy of the mind and logic, London university, 1928-44. Macmurray became professor of moral philosophy in Edinburgh university in 1944. His published works include *Freedom in the Modern World*, 1932; *Philosophy of Communism*, 1933; *Reason and Emotion*, 1935; *The Clue to History*, 1938; *Challenge to the Churches*, 1941; *Constructive Democracy*, 1943.

**Macnaghten, SIR MELVILLE LESLIE** (1853-1921). British administrator. Born June 16, 1853, he was educated at Eton, and in 1889 became chief constable of the criminal investigation department, Scotland Yard. He represented the police on the committee appointed by Asquith to inquire into the identification of criminals, 1893-94. He was chief of the criminal investigation de-



Sir Melville Macnaghten, British administrator  
*Elliot & Fry*

partment, 1903-13. Knighted in 1907, he published *Days of My Years*, 1914. Died May 12, 1921.

**MacNaghten Rules.** See *Insanity*.

**MacNalty, SIR ARTHUR SALUSBURY** (b. 1880). British physician. He was educated at S. Catherine's and Corpus, Oxford, and University College hospital, London, being a medical inspector of the local government board, ministry of Health, 1919-35, and chief medical officer to the ministry of Health and board of Education, 1935-41. In 1941 he was appointed editor-in-chief of the official medical history of the Second Great War. MacNalty was honorary physician to the king from 1937 to 1941, and was knighted in 1936.

**Macnamara, THOMAS JAMES** (1861-1931). A British politician. Born in Montreal, Aug. 23, 1861, son of a private soldier, he was educated at Exeter and London, and taught in provincial elementary schools, 1876-92. Appointed editor of *The Schoolmaster* in 1892, he became president of the National Union of Teachers in 1896. He was elected to the London County Council in 1894, and in 1900 was returned as Liberal member for N. Camberwell. He was parliamentary secretary to the local government board, 1907-8; transferred to the admiralty, he was parliamentary secretary, 1908-15, and financial secretary from that year until 1920, when he became minister of Labour until 1922, when he left office with Lloyd George, of whom he was a staunch supporter. He remained an M.P. until 1924, and died Dec. 3, 1931.

**Macnaughtan, SARAH** (d. 1916). British novelist. Daughter of a J.P., she spent much of her early life in visiting all parts of the world. She had experience as a nurse in the Balkans, and in the South African War, having already achieved some success with her first novel, *Selah Harrison*, 1899. On the outbreak of the First Great War she went with a hospital unit to Antwerp, and in 1915 with the Red Cross to Russia, but returned with broken health and died in London, July 24, 1916. Her many stories included *The Fortune of Christina*, 1901; *A Lame Dog's Diary*, 1905; *The Expensive Miss Du Cane*, 1907; *Peter and Jane*, 1911.

**McNaughton, ANDREW GEORGE LATTA** (b. 1887). Canadian soldier. He was born at Moosomin, Sask., Feb. 25, 1887, and educated at Bishop's College school, Lennoxville, and McGill university, where

he was senior demonstrator in electrical engineering before serving in the First Great War.



A. G. L. McNaughton, Canadian soldier

On returning to Canada in 1919 he was put on the committee for the reorganization of the military forces, becoming deputy chief of the Canadian general staff in 1922. Promoted major-general in 1929, he was chief of the general staff for six years, and was appointed to lead the 1st division which came to Great Britain in Dec., 1939. McNaughton was given command of the 1st Canadian army in 1942 but resigned next year owing to ill-health. Retiring as general in 1944, he was minister of national defence, and represented Canada on the U.N. atomic energy commission and the security council, 1948. He was made C.H. 1946.

**MacNeice, LOUIS** (b. 1907). A British poet. Born in Belfast, Sept. 12, 1907, he was educated at Marlborough and Merton College, Oxford.

Having lectured in classics at Birmingham university, 1930-36, and then in Greek at Bedford College, he was from 1941 a writer of feature programmes for the B.B.C. His early poetry, while always clever, had sometimes a brittle quality, but depth had come when he published *The Earth Compels*, 1938, and *Autumn Journal*, 1939. Of his poetic dramas, *Christopher Columbus* was broadcast on the 450th anniversary of the discovery of America, Oct. 12, 1942; and *The Dark Tower* in 1946. His verse trans. of Goethe's *Faust* was broadcast 1949. MacNeice collaborated with W. H. Auden in *Letters from Iceland*, 1947.

**McNeile, CYRIL**. Real name of the author of *Bulldog Drummond* (*q.v.*) and other stories of adventure, better known under his pen-name of Sapper (*q.v.*).

**McNeill, JOHN** (1854-1933). A British evangelist. Born July 7, 1854, at Houston, Renfrewshire, son of a foreman quarryman, he was a railwayman before deciding in 1877 to study for the Presbyterian ministry. After training at



Louis MacNeice, British poet

Edinburgh and Glasgow universities he was ordained in 1886. He acted as evangelist with D. L.



John McNeill,  
British evangelist  
Haines

Moody in Aberdeen in 1892, and conducted successful missions in Great Britain and throughout the world. He was minister of Christ Church, Westminster Bridge Road, London, in

1908, and in 1910 moved to Free S. George's Presbyterian Church, Liverpool. He died April 19, 1933.

**MacNeill, JOHN GORDON SWIFT** (1849-1926). Irish jurist and politician. Born in Dublin, March 11, 1849, and educated there and at Christ Church, Oxford, he was called to the Irish bar in 1876. In 1909 he was given the chair of constitutional law in the national university. As Nationalist M.P. at Westminster from 1887 to 1918, he became an authority on procedure. His motion disallowing the votes of the directors of the Mombasa rly. defeated the Unionist government in 1892. He procured the abolition of flogging in the British navy, established the principle that cabinet ministers should not direct public companies, and was largely responsible for the Titles Deprivation Act, 1917. Author of *Constitutional and Parliamentary History of Ireland*, 1917, he died Aug. 24, 1926.

**Macon.** American naval airship constructed as a sister ship to the Akron (*q.v.*). Launched April 21, 1933, 17 days after the loss of the Akron, the Macon was a helium-filled ship of similar size and design, and carried five aeroplanes. She crashed into the sea, as a result of structural failure, Feb. 12-13, 1935. Two lives were lost (of 83).

**Mâcon.** A town of France. Capital of the dept. of Saône-et-Loire, it stands on the right bank of the Saône, 45 m. N. of Lyons. The chief buildings are the large modern church of S. Pierre and the hôtel de ville. The cathedral of S. Vincent, a fine 13th century building, was partly destroyed at the Revolution. The industries include the manufacture of watches, casks, and vats, and a trade in Burgundy wine. A town before the Roman invasion of Gaul, Mâcon became the seat of a bishop before 700. It had its own line of counts, and before 1477 was part of the duchy of Burgundy. The bishopric was suppressed in 1790. Pop. 21,073.

**Macon.** City of Georgia, U.S.A., the co. seat of Bibb co. It is on the Ocmulgee river, at the head of navigation. 88 m. S.E. of Atlanta, and is served by the Southern and other rlys. and by steamers, and an airport. It is the centre of the Georgia peach industry, and other fruit and vegetables are grown there. Its industries include cotton mills, furniture factories, and rly. workshops. It is the seat of Mercer university. A city since 1832, it has a pop. of 57,865.

**MacPherson, AIMEE SEMPLE** (1890-1944). American evangelist, born in Ontario, Canada, Oct. 9, 1890. Her mother was in the Salvation Army, and she herself began to preach at 17. Her first husband, a Scottish evangelist, took her to the East; on his death she returned to the U.S.A., where she became head of the Elim Four Square Gospel Alliance. The basis of her teaching was divine healing through baptism; her followers underwent total immersion, and she led pilgrimages to perform this rite in the waters of the Jordan. The Angelus temple built for her in Los Angeles cost 1½ million dollars. She was several times married and divorced, and in 1926 disappeared for some weeks in somewhat disreputable circumstances; but in the eyes of her millions of followers she was never discredited. Known to the newspapers as the Hot Gospeller and to converts as Sister Aimee, she died in Oakland, Calif., Sept. 27, 1944.

**Macpherson, JAMES** (1736-96). Scottish author. Born at Ruthven, Kingussie, Inverness-shire, Oct. 27, 1736, he was educated at Aberdeen and Edinburgh universities. After experience as a bookseller's assist-

ant and a schoolmaster, and encouraged by John Home, he brought out in 1760 a volume entitled *Fragments of Ancient Poetry Collected in the Highlands*. This was followed by two epic poems, *Fingal*, 1762, and *Temora*, 1763, purporting to be translations from a Gaelic poet named Ossian. A heated controversy arose concerning their origin, Samuel Johnson being among those who regarded them as forgeries. While the problem is still an open one, competent critics admit the existence of a Fingal-Ossian legend, but agree that Macpherson's work contains only fragments of Gaelic, that he liberally edited his originals, and interpolated passages of his own.

Macpherson's poems, which display a genuine love of nature in her wilder aspects, played a definite part in the romantic movement, influencing Goethe, Schiller, and Byron, among others, and they were the favourite reading of Napoleon. His prose works include *Original Papers Containing the Secret History of Great Britain from the Restoration till the Accession of George I.*, 1775. He was agent to the nabob of Arcot in 1779 and M.P. for Camelford, 1780-90, and died Feb. 17, 1796.

**Bibliography.** *Journey to the Western Highlands of Scotland*, S. Johnson, 1775; *Inquiry into the Authenticity of Ossian*, ed. M. Laing, 1807; A. Clerk, 1870; W. Sharp, 1897; *Life and Letters*, T. B. Saunders, 1895; J. M., an Episode in Literature, J. S. Smart, 1905.

**Macquarie.** A river of New South Wales. A tributary of the Darling-Murray system, it is 590 m. long. Its basin, a rich pastoral region, contains the important centres of Bathurst, Wellington, and Dubbo. See Darling River.

**Macquarie.** Island of the S. Pacific Ocean, administered by Tasmania. It is 20 m. long by 3 m. wide. Sea elephants and king penguins are numerous. The island is a meteorological station, and a rescue station for shipwrecked mariners.

**Macquer, PIERRE JOSEPH** (1718-84). French chemist. Born in Paris, Oct. 9, 1718, he was one of the first to free chemistry from the shackles of the old alchemical formulae. Writing on the properties of aluminium, sulphate of ammonia, and oxidation, he also showed that arsenic was metallic. He died in Paris, Feb. 15, 1784.

**Macquoid, KATHARINE SARAH** (1824-1917). British author. Born in London, Jan. 26, 1824, she lived for some years in France. In 1851 she married the artist, Thomas R. Macquoid. Her first novel, *A*



Mâcon, France. Façade of the cathedral of S. Vincent

Bad Beginning, 1862, was published anonymously and met with considerable success, and thereafter she produced books almost up to her ninetieth year. She died at Tooting, June 24, 1917. Her books include *Hester Kirton*, 1864; *Patty*, 1871; *A Ward of the King*, 1898; and *Molly Montague's Love Story*, 1911. She also wrote numerous travel books, illustrated by her husband.

**Macramé** or **MACRAMI** (Turkish, *magrama*, towel, napkin). Lace-like trimming of knotted thread. Of considerable antiquity, the art was originally confined to a plain plaited fringe, woven into a geometrical pattern, and was chiefly carried on by poor children in the schools and convents along the Genoese Riviera. Towards the middle of the 19th century more elaborate designs were introduced. Genoese macramé often formed part of wedding trousseaux, and many of these were exported to S. America and California. As a domestic industry, it obtained, with woolwork and needlework, some vogue in Great Britain during the 19th century. Macramé lace has great durability.

**Macready, SIR CECIL FREDERICK NEVILL** (1862–1946). British soldier and administrator. Born May 7, 1862, a son of W. C. Macready (v.i.), he went to Marlborough and Cheltenham, and was commissioned into the Gordon Highlanders, 1881. He served in the South African War, and in 1909 commanded an infantry brigade. He was knighted in 1912. Adjutant-general in France, 1914–16, he was at the War office, 1916–18. On leaving the War office, having reached the rank of general, he became commissioner of the metropolitan police, and dealt with the police strike in August, 1918. He was c.-in-c., Ireland, 1920–22, and he retired in 1923, receiving a baronetcy. He published *Annals of an Active Life*, 1924. He died Jan. 9, 1946.

**Macready, WILLIAM CHARLES** (1793–1873). British actor. Born in London, March 3, 1793, the son of an Irish actor-manager, and educated at Rugby, he made his first appearance at Birmingham as *Romeo*, 1810. After acting with Mrs. Siddons, and Dorothy Jordan in the provinces, he made his first appearance in London at Covent Garden, Sept. 16, 1816, as *Orestes*, in *The Distressed Mother*. In 1819 and 1820 he rose to the front rank with his performances of *Richard III*, *Coriolanus*, *Hamlet*, and *Virginius*, in *Sheridan Knowles's*

tragedy of that name. Leading actor at Drury Lane, 1823–36, he acted in the U.S.A. in 1826–27, and in Paris, 1828.

Manager of Covent Garden, 1837–39, he there produced Lytton's *The Lady of Lyons*, playing opposite Helen Faucit who was also his leading lady at The Haymarket, 1839–41, where he scored great successes in the title rôle of



*W. C. Macready*

Lytton's *Richelieu*, and as Alfred Evelyn in Lytton's *Money*. From Dec. 27, 1841, to Jan. 14, 1843, he was manager of Drury Lane, where he made his final appearance as *Macbeth*, Feb. 26, 1851. He died at Cheltenham, April 27, 1873.

An actor of great talent, painstaking and conscientious almost to a fault, who did much to purge the Shakespearian drama from Restoration alterations and interpolations, Macready had a magnificent voice and a graceful carriage. Tennyson praised him in a sonnet and Talfourd styled him the most romantic of actors. He was a careful student of the classics, and showed generous traits in his private life. See *Acting. Consult Reminiscences*, 1875; *Diaries*, 1833–51, ed. W. Toynbee, 1912; *Lives*, W. Archer, 1890, and W. T. Price, 1895; *Macready as I Knew Him*, Lady Pollock, 1885.

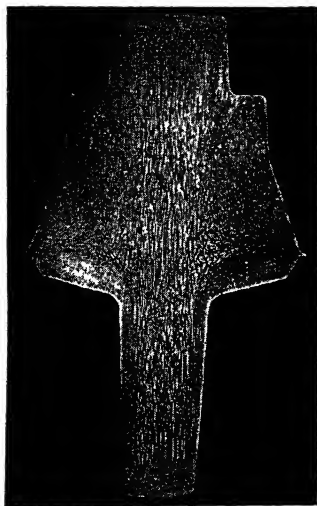
**Macrinus, MARCUS OPILIUS SEVERUS** (164–218). Roman emperor 217–218. Born of obscure parents in Mauretania, he became prefect of the praetorian guards, instigated the murder of the emperor Caracalla, and ascended the throne. After his disastrous Parthian campaign, the soldiery proclaimed Elagabalus emperor. Macrinus, defeated near Antioch, was captured and put to death.

**Macroon.** Market town and urban dist. of co. Cork, Eire. It stands on the river Sullane, 24 m. by rly. W. of Cork. It is the terminus of a branch line, but passengers are carried on to Kerry by coach or motor. There is a castle, built probably in the 12th century and restored later. Surrounding country is studded with remains of feudal and religious edifices. The town has a trade in grain and dairy produce. Market day, Sat. Pop. 2,230.

**MacRory, JOSEPH** (1861–1945). Irish ecclesiastic. Born at Ballygawley, Tyrone, he was educated

at S. Patrick's seminary, Armagh, and at Maynooth College. Ordained in 1885, he became professor of Sacred Scripture and Oriental languages at Maynooth in 1889. In 1915 he was consecrated bishop of Down and Connor, and from 1928 was archbishop of Armagh and primate of All Ireland. Made a cardinal the following year, he was papal legate to the national eucharistic congress in Melbourne, 1934. Eloquent both in the pulpit and on the platform, he died at Armagh, Oct. 13, 1945.

**Macrostructure.** The structure of a section of any metal or alloy viewed with the naked eye or under low magnification. No special apparatus is needed. A section of the sample is cut and roughly polished. The surface is etched with suitable reagents,



Macrostructure. Macrograph of an alloy steel forging for the rotor of a pump in a jet turbine engine

usually acids, rather more deeply than for micro-examination. Different constituents or crystals in different states are selectively etched and so a pattern or structure is revealed. In this way the flow lines of a forging can be seen. In a casting, the order or method of solidification can be deduced from a study of the crystal structure, any non-metallic inclusions or flaws being clearly revealed. A variation of this is taking sulphur prints on a steel sample to determine the distribution of the sulphides. Recently a method of micro-cum-macro-examination has been developed.

**MacSwiney, TERENCE JAMES** (1880–1920). An Irish politician. Born in Cork, March 28, 1880, and



educated at the Christian Brothers' school in that city, he graduated while engaged in business, and became a teacher. He was a pioneer of Sinn Féin in the south, but the Volunteer movement claimed his chief attention, and as an organizer of that force he came under police supervision. After the rebellion of Easter, 1916, he was deported to England, where he was imprisoned. Yet at the general election of 1918 he was elected unopposed for Mid Cork, and chosen as a city councillor.

After the murder of lord mayor MacCurtain, MacSwiney was elected to fill the vacancy, and in 1920 was arrested by the military and sentenced by district court-martial to two years' imprisonment for having a secret police cipher under his control, and for possessing seditious documents. He went on the hunger-strike which was terminated by his death in Brixton prison after 74 days on Oct. 25. The body was removed to St. George's R.C. cathedral, Southwark, and on Oct. 28 was taken, the coffin wrapped in Sinn Féin colours, by road to Euston, escorted by English police and Irish volunteers and pipers. From Holyhead the body was taken direct to Cork, and there buried in S. Finnbarr's cemetery.

**McTaggart, JOHN M'TAGGART ELLIS** (1866-1925). British philosopher. Educated at Clifton and Trinity College, Cambridge (where he was lecturer, 1897-1923), he established himself in the front rank of contemporary European philosophers. His theories were developed from Hegel's idealism; indeed McTaggart and Bradley may claim to have established neo-Hegelianism. Among the most brilliant logicians of his day, McTaggart exerted influence mainly as a teacher. He wrote *Studies in Hegelian Dialectic*, 1896; *Studies in Hegelian Cosmology*, 1901; *Commentary on Hegel's Logic*, 1910. He died Jan. 18, 1925.

**McTaggart, WILLIAM** (1835-1910). Scottish painter. Born Oct. 25, 1835, at Aros, Argyllshire, he studied art in Edinburgh in 1852. In 1859 he was elected A.R.A. and in 1870 R.A. (of Scotland). In 1878 he was made vice-president of the Royal Scottish Water Colour Society, and he died near Edinburgh, April 2, 1910. McTaggart painted with feeling and imagination scenes of Scottish country life, sea pieces, and portraits. His works include *The Pressgang*, 1865; *A Ground Swell*, Carradale, and *The Fishers Landing*, 1878;

*On the White Sands*, 1880; *The Coming of S. Columba*, 1895; and *The Emigrants*.

**MacWhirter, JOHN** (1839-1911). Scottish painter. He was born at Slateford, near Edinburgh, March 27, 1839. Educated at Peebles, he entered the school of design in Edinburgh, and in 1854 exhibited his first picture at the R.S.A. Elected A.R.S.A. in 1864, he exhibited for the first time at the R.A. in 1865. He became A.R.A. in 1879 and R.A. in 1893. His paintings include representations of scenes in the Scottish Highlands and the Italian Alps. He died in London, Jan. 28, 1911. One of his pictures, *June in the Austrian Tirol*, is in the Tate Gallery; his *Constantinople* and the *Golden Horn* is in the municipal gallery, Manchester.

**Madagascar.** Island in the Indian Ocean, belonging to France. It lies off the E. coast of Africa, the



Madagascar. Map of the island off the East Coast of Africa

Mozambique Channel separating it from the mainland, about 250 m. away. Its area is estimated at 241,094 sq. m. Extreme length from N. to S. is 980 m.; from E. to W. extreme breadth is 360 m. It includes S. Marie and several other islands off the coast. Antananarivo is the capital and the only large town. Tamatave is the chief port, others being Majunga, Diego Suarez, and Tuléar.

The island is mountainous, especially in the centre and E., but less so in the W. Two great plateaux which cover much of it are separated by a low ridge. There

are many extinct volcanoes, Ankaratra being nearly 9,000 ft. high. The coastline is largely unbroken, save on the N.W., and there are consequently few bays or good harbours, except that of Diego Suarez, where is a govt. dry dock. The longest river is the Mangoka. There are lagoons on the E. side, but few lakes. The climate is tropical.

Of a pop. est. at 4,000,000, only a few hundreds are Europeans; there are also a few Hindus and Chinese. Of the native Malagasy races the most numerous are the Hovas, who number about a quarter of the whole. The Betsileo, Betsimisaraka, Tanala, and Sakalava are others. Each has its own tongue, but that of the Hovas is generally used.

The country is administered by a governor-general, assisted by a consultative council. An assembly of Europeans and natives is chosen by electoral colleges. There is an elaborate system of administering justice; at its head is a court of appeal, and there are courts in four principal towns and in the various provinces and districts. The revenue is obtained from a poll-tax, and taxes on land, houses, and cattle. There are also import duties, while the government owns the postal and telegraph services. Education is compulsory up to 14, and all children learn French. In the capital is a school for the study of native medicine.

The chief occupation of the people is agricultural. The main crops are rice, potatoes, maize, haricots, tapioca, sugar, coffee, cocoa, and hemp. Forest trees yield valuable timber, e.g. mahogany, ebony, and rosewood. India-rubber, copal, and other gums are plentiful, as is graphite. Bark for tanning is another export. Six million head of cattle are kept, hides being exported and meat preserved. Gold, copper, lead, iron, and corundum are found. The island has 16,000 m. of roads, but only four rlys.

#### Flora and Fauna

During the long period since the separation of the island from the mainland a great differentiation has taken place in the wild life of the two, and they are now mostly quite unlike. The mammals of Madagascar are few and small, though fossil and semi-fossil remains of a hippopotamus show that some of the larger African beasts came so far E. before the insulation. Mammals peculiar to Madagascar are the lemurs, including the true lemurs, the Indris and the Cheirogale, and the allied aye-



aye (*q.v.*). Endemic carnivora include two species of *Cryptoprocta*, *C. ferox* being like an enormous weasel 3 ft. long; while tenrecs (*Centetes*), the largest 12 to 16 ins. long, tailless, and with a long, flexible snout, and several allied genera represent the insectivores. Among the native birds nearly 100 species are peculiar to Madagascar, as also are between 20 and 30 species of chameleons and numerous insects.

The flora is abundant, varied, and specialised. Several plants have become well known as curiosities of vegetation, such as the "traveller's-tree," which provides for the thirsty by collecting large supplies of water in the sheaths of its leaves. The lattice-leaf is a veritable wonder, and among the economic plants peculiar to Madagascar are landolphia, producing rubber, the raphia-palm, and the beautiful evergreen tree *Astrapeia wallichii*.

**HISTORY.** Madagascar was discovered in 1500 by a Portuguese navigator, and was long known as the isle of St. Lawrence. It was then peopled by a number of tribes at first independent of each other, with settlements of Arabs.

#### Growth of French Power

About 1700 the French established military posts on the island, but it was not until well into the 19th cent. that they really began to take possession. At the time of the Napoleonic Wars they surrendered their posts on the island, and in 1811 Tamatave was temporarily occupied by the British. King Radama, who began to reign in 1810, allowed Christian missionaries to enter the island, but after his death in 1828 they were expelled, the native Christians persecuted, and Europeans and their wares excluded. In 1861 missionaries and traders were readmitted.

In 1865 Great Britain and France agreed to respect the independence of Madagascar, which, under Ranavalona II, a queen who began to reign in 1868, had a fairly strong army, and a system of administration directed by Europeans. It was thought by the British that steady support of the Hovas rule would be the best policy. The French, however, soon took up a different attitude. In 1840 they had obtained a protectorate over a small chieftain, but it was more or less dormant until 1878. They then renewed their claim, and in 1883 sent an ultimatum to the queen. The demands were refused, and Tamatave was bombarded and taken. The war lasted until 1885, when the French obtained Diego Suarez

and a certain control over the foreign policy of the island. In 1890 the protectorate of France was recognized by Great Britain, but it needed another war to make the natives accept it. In 1895 the capital was entered by French troops, and on Aug. 6, 1896, Madagascar was officially declared a French colony.

After the defeat of France in June, 1940, Madagascar remained under Vichy control until on May 5, 1942, British forces landed in Diego Suarez bay on the N. with the object of forestalling a possible Japanese occupation of the island, which would have imperilled Allied lines of communication with the Middle and Far East (the Mediterranean being closed). The gov.-gen. offered resistance, but Diego Suarez was captured by the 8th. The gov.-gen. showing no disposition to enter into an arrangement with the U.N., a further landing was made at Majunga, Sept. 10. Antananarivo fell Sept. 23, and hostilities ceased Nov. 5. Gen. Legentilhomme (*q.v.*) arrived in the island in Jan., 1943, and took over responsibility as high commissioner for Fighting France. See Malagasy.

**Bibliography.** Fifty Years in Madagascar, J. Sitree, 1924; Native Races of Africa and Madagascar, Sir J. Frazer, 1938; The Drama of Madagascar, Howe, 1938; Across Madagascar, Chapman, 1943.

**Madam Butterfly.** Opera in 3 acts by Giacomo Puccini. Produced at La Scala, Milan, Feb. 17, 1904, it received a lukewarm reception; revised by the composer, it was performed at Brescia three months later. The first London performance was given at Covent Garden in 1905, with Destinn as Cho-Cho-San (Butterfly), Caruso as Pinkerton, and Scotti as Sharpless. The opera, one of the most popular in the modern repertory, is notable for the intensity of its emotional appeal, *e.g.* the love duet and the aria One Fine Day.

The libretto by Luigi Illica and Giuseppe Giacosa, was derived from an American magazine story by John Luther Long which, dramatised by Belasco as *Madame Butterfly*, was a sensational success in New York in 1899, and in London the following year.

**Madame Bovary.** Novel by Gustave Flaubert. Its writing occupied the author more than four years, from the beginning of 1852 to May, 1856. It appeared in the *Revue de Paris* the same year, and achieved little more than a *succès de scandale*, a charge of immorality

being brought against author and publisher. Both were acquitted, and the novel appeared in book form in 1857. It marked the beginning of a new school of objective realism, and its influence on such writers as Daudet and Zola was far-reaching. It tells with masterly detachment the story of the sentimental, unsatisfied wife of an unromantic country doctor.

**Madame Sans-Gêne.** Nick-name of Thérèse Figueur (1774-1861). Born at Talmay, Côte d'Or, daughter of a grain merchant, at the age of 19 she was enrolled in a cavalry regiment and saw service at Hohenlinden, Toulon, Austerlitz, Jena, and Waterloo, had four horses shot under her, and was a prisoner at Lisbon and Southampton. In 1818 she married Clément Sutter, a dragon, and, left a widow, died in poverty Jan. 4, 1861. She is sometimes confused with La Maréchale Lefebvre, duchess of Dantzic, through the play by Victorien Sardou and Émile Moreau, produced at the Vaudeville, Paris, Oct. 17, 1893. In the title-rôle of this play Gabrielle Réjane (*q.v.*) made one of her most successful and brilliant impersonations.

A three-act comedy, with a prologue, adapted by J. Comyns Carr from the French play, was produced at The Lyceum, London, April 10, 1897, Henry Irving taking the part of Napoleon and Ellen Terry the title-rôle. The Duchess of Dantzic, a romantic opera in three acts on the same theme, by Henry Hamilton, with music by Ivan Caryll, was produced at The Lyric, Oct. 17, 1903; and an opera, *Madame Sans-Gêne*, by Umberto Giordano, at the Metropolitan Opera House, New York, Jan. 25, 1915.

**Madang.** A seaport of New Guinea, formerly known as Friedrich Wilhelmshafen. It stands on Astrolabe Bay, in the N.E. of the island, and was the commercial capital of the German protectorate, Kaiser Wilhelms Land, occupied in Oct., 1914, by an Australian force. (See Papua.) In Japanese hands from the beginning of 1942, Madang was on a coastal motor road constructed by the enemy. It was recaptured, April 24, 1944, by the Australian 7th div. after an advance straight over the 5,600 ft. range (see Shaggy Ridge) lying close to the coast. The harbour is protected by several islands, on one of which, Beliao, is a hospital for Europeans. It exports copra, trepang, mother-of-pearl, and gold. Pop. (white) 208.

**Madariaga y Rojo, SALVADOR DE** (b. 1886). Spanish scholar and diplomatist. Born at Corunna, July 23, 1886, he was educated at Madrid and Paris, and from 1911 to 1916 was technical adviser to the Spanish N. rly. and from 1928 to 1931 was professor of Spanish studies at Oxford. With the establishment of the Spanish republic in 1931, he was appointed ambassador to the U.S.A., and ambassador to France, 1932-34. Chief Spanish delegate to the League of Nations, 1931-36, he was minister of education in the Lerroux cabinet, 1934. His books include a comparative study of Shelley and Calderon, 1920; *Anarchy or Hierarchy*, 1937; *The World's Design*, 1938; *Columbus*, 1939; *Spain*, 1943; *Rise (1946) and Fall (1947) of the Spanish-American Empire*.

**Maddaloni.** Town of Italy, in the prov. of Naples. It stands in a plain 17 m. by rly. N.N.E. of Naples. Crowned by a castle and a church, it has a fine palace of the Caraffa family, a college, and an institute for soldiers' sons. Weaving and quarrying are the chief industries. Close to the town there is a famous aqueduct, about 20 m. long, built by Charles III. of Naples between 1753 and 1759 to bring water to the gardens of Caserta.

**Madden, SIR CHARLES EDWARD** (1863-1935). British sailor. He joined the navy in 1875, and served during the Egyptian war, 1882. He specialised in the torpedo, and was staff officer of the Vernon torpedo school-ship, 1893-96. Made naval assistant to the controller of the navy in 1905, he was naval assistant to the first sea lord, 1906. In the following year he was captain of the Dreadnought and chief of staff, Home Fleet, and in 1910-11 junior sea lord. Rear Admiral, 1911, he successively commanded the first division Home Fleet, the third cruiser squadron, and the second cruiser squadron. He was appointed chief of staff to Admiral Jellicoe, Aug. 4, 1914. In 1917 he was appointed second in command of the Grand Fleet, and from 1919 to 1922 was commander-in-chief Atlantic and Home Fleets. Vice-admiral, 1916, admiral, 1919, he became admiral of the fleet, 1924. Knighted, 1916, he was created a baronet in 1919, and awarded £10,000. In 1927 he became first sea lord. He died June 5, 1935.

**Madder.** A dye stuff originally produced from various species of plant, *Rubia tinctorum* in Europe and *R. cordifolia* in Asia being the most important. The colouring

principle, alizarin, occurs in the root as a glucoside which on fermentation is decomposed. Alizarin is yellow in colour, but on combination with a suitable mor-

dant, such as alum, gives red to purple tints which are fast to light. The use of madder for dyeing cloth appears to have been known to the ancient Egyptians and until the introduction of synthetic dye-stuffs madder was extensively cultivated in France and Holland. Large quantities were imported to England from Mediterranean areas. See Alizarin.

**Madeba Map.** Mosaic map of Syria, Palestine, and Egypt, forming the pavement of a 6th century Byzantine church at Madeba, Moab. The oldest geographical map known, it was discovered by Father Kleophas in 1896. Although mutilated, 49 sq. yds. remain, depicting Jerusalem, the Holy Sepulchre, the Dead Sea with boats, Jordan and Nile, palm-trees and animals. See Peutinger Table.

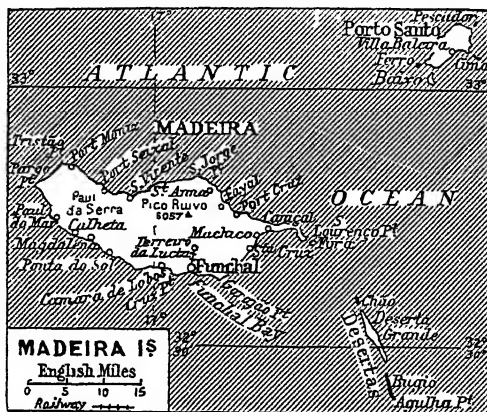
**Madeira.** Wine made of grapes grown in the Madeira Islands. A fortified wine of full body and fragrant bouquet, yet soft, mellow, and elegant, it owes its properties partly to soil, but chiefly to the peculiar process of artificially maturing it. Normally containing from 16 to 20 p.c. of alcohol, it improves by keeping. There are two sorts, the "dry" or pale, and the sweet, rich type.

**Madeira.** Portuguese island in the Atlantic Ocean off the coast of N.W. Africa. It is a mountainous island of volcanic origin 35 m. long by 12 m. wide. The culminating point of the island is the Pico Ruivo, alt. 6,057 ft. A central range, averaging 4,500 ft. high, traverses the island; its lateral ridges, forming deep gorges, end in precipitous cliffs, 1,000 ft. to 2,000 ft. in alt.; between them are the bays which shelter the chief villages.

The central part is a large plateau or amphitheatre, the Curral das Freiras. The climate is mild and salubrious; the mean temperature is 65° F.

The N. part of the island is extremely fertile, but irrigation has to be practised, as most of the streams

dry up during summer. In the lowlands guavas, mangoes, coffee-, orange-, lemon-, banana-, and fig-trees flourish, and the fruit is exported, while the wine is famous.



Madeira Islands.

Map of the island group off the north-west coast of Africa

All cereals and most European vegetables are grown. Other exports are sugar, arrowroot, honey, wax, cane, and wicker goods, straw hats, and lace. A cog rly. ascends to the village of Monte at an elevation of 2,000 ft. The roads are very steep, and *carros*, covered conveyances, running on sledges and drawn by oxen, are largely used, as also are mules. The people are of somewhat mixed descent—mainly Portuguese with some Moorish and Negro blood. Education is extremely backward. The capital and chief port is Funchal (*q.v.*) on the S. coast.

Madeira (Port., timber) was discovered in the 14th century, first settled in 1419, and occupied by the British 1807-14. Pop. 250,124. *Consul* Madeira, Canary Is., and Azores, A.S. Brown, 13th ed., 1927.

**Madeira.** River of Brazil, the chief tributary of the Amazon. Formed on the Bolivian boundary by the junction of the Mamoré (*q.v.*) with the Beni (*q.v.*), it flows N.E. through the state of Amazonas (*q.v.*) and discharges into the Amazon about 80 m. below Manaus after a course of some 900 m. from its confluence with the Mamoré, or, including the latter, 2,200 m. Navigable by ocean steamers to São Antonio Falls, a distance of 715 m. It was explored by the Roosevelt-Rondon expedition in 1914, and its chief affluent, the Rio Dúvida, was renamed Rio Roosevelt. At its meeting with the Amazon it is 2 m. in width, while its depth for 500 m. from its mouth varies from 27 ft. to 200 ft. Its

upper reaches are obstructed by rapids and cataracts. Its drainage basin is estimated at 425,000 sq. m.

**Madeira Islands.** Small group in the Atlantic belonging to Portugal. They lie about 440 m. W. of Mogador, on the Moroccan coast, and 670 m. S.W. of Lisbon. They consist of Madeira (*q.v.*), Porto Santo, 22 m. to the N.E., the only other permanently inhabited island, and the Desertas, three rocky islets 11 m. to the S.E., and have a total area of 314 sq. m. The islands rank as a maritime district incorporated in Portugal. Population 195,000.

**Madeleine, La.** Paris church dedicated to S. Mary Magdalene. It stands at the beginning of the Grands Boulevards, facing the Rue Royale. Modelled on the temple of Jupiter at Athens, and begun in 1764, when Louis XV laid the first stone, it was completed in 1843. It is 354 ft. long, 141 ft. wide, 98 ft. in height, is surrounded by a Corinthian colonnade, and has a Grecian façade raised high above

**Madeley.** Parish of Shropshire, England. It stands on the Severn, 7 m. N.E. of Much Wenlock, and is served by rly. It includes Ironbridge and Coalbrookdale, and has large ironworks and coal and ironstone mines. Market day, Sat. Another Madeley is in Staffs, near the Cheshire border; pop. 2,819.



**Madonna.** The Madonna del Granduca of Raphael, one of the master's most beautiful studies of womanhood; Pitti Palace, Florence. Top, right, head of the Madonna, from a painting by Botticelli; Uffizi Gallery, Florence. See text in next page

the boulevard and approached by 28 steps. The richly decorated interior contains some beautiful sculptures and other works of art. Napoleon wished to make the building a temple of glory; Louis XVIII restored it to its original purpose and gave it its name.

he organized was discovered, and he had to escape to the U.S.A., his supporters began the revolt; he returned and took the lead, and the rising proved successful. Madero was elected president, Oct. 1, 1911. He initiated reforms, but was unable to stamp out insurrection.

On Feb. 9, 1913, a new revolt started in the capital; ten days later Madero was arrested and on Feb. 23 murdered.

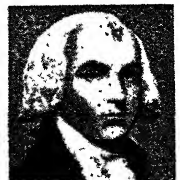
**Mad Hatter, THE.** Member of the famous tea party described in Lewis Carroll's story for children Alice's Adventures in Wonderland. See Mad Tea Party; also Alice's Adventures illus.

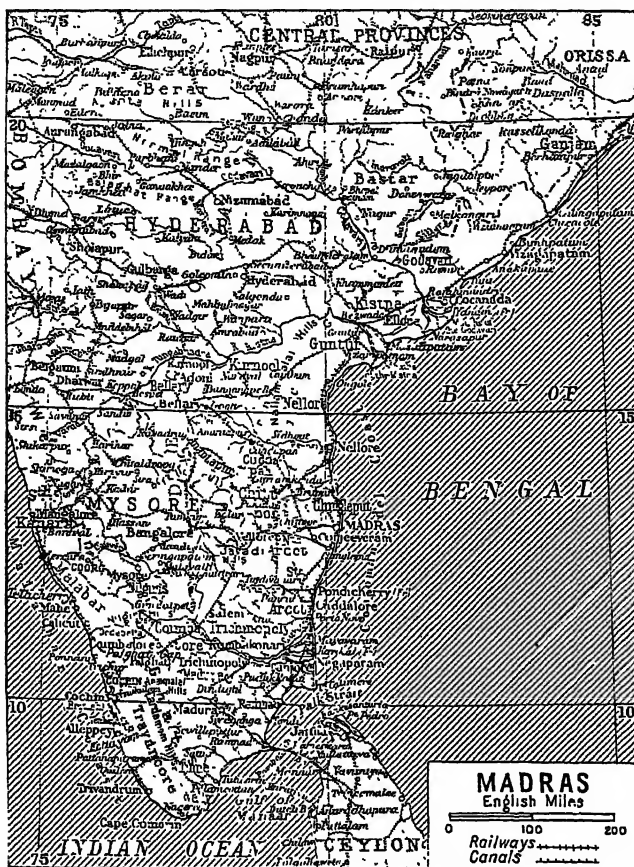
**Madhya Bharat.** Union of 20 formerly separate states of India, formed at Gwalior city, May 28, 1948; also called the united state of Gwalior, Indore, and Malwa, or the Malwa union. The states were: Alirajpur, Barwani, Dewas Senior and Junior, Dhar, Gwalior, Indore, Jaora, Jabua, Khilohpur, Narsingarh, Rajgarh, Ratlam, Sailana, Sitamau, Jobat, Kathiwar, Kurwai, Mathwar, and Piploda. The maharaja of Gwalior was installed as the first rajpramukh. The two capitals of the union are Gwalior (summer) and Indore (winter). Area 46,353 sq. m. Pop. 7,200,000. See names of individual states.

**Madhya Union.** Name given in 1949 to the state of India more familiar as Central Provinces (*q.v.*).

**Madison.** Capital of Wisconsin, U.S.A., also second largest city and co. seat of Dane co. Built on an isthmus between Lakes Mendota and Monona in the Four Lakes district, 81 m. W. of Milwaukee, it is served by rlys. and three airports. A leading educational centre, it has seven state and university libraries. The state university has 1,000 acres of grounds beside Lake Mendota; the imposing white granite capitol, in a wooded park, has a dome rising 285 ft., which in the U.S.A. is exceeded in height only by the Capitol at Washington. Industries include manufactures of machine tools, farm and hospital equipment, road and dairy machinery, and processed foods. There are rly. shops and limestone quarries. Madison was selected as capital in 1836 on the formation of Wisconsin Territory, and chartered as a city in 1856. Pop. 67,447.

**Madison, JAMES (1751-1836).** President of the U.S.A. Born at Port Conway, Virginia, March 16, 1751, he was delegate to the Revolutionary Convention, 1776; the Continental Congress, 1780-83; and the Philadelphia Convention of 1787, *James Madison*





Madras. Map of the largest Deccan state of the Indian Union

which was summoned to draw up a constitution.

After the publication of the terms, Madison, with two collaborators, wrote a series of 85 essays, published in book form as *The Federalist*. Democratic president in 1808, and re-elected in 1812, he died at Montpelier, Virginia, June 28, 1836. Consult *The Writings of James Madison*, 1900-10.

**Madison Square.** Area at the junction of Fifth Avenue and Broadway, New York City. On the E. side is the Metropolitan Life Insurance Co.'s building, with a 50-storey tower. Another tower overlooking the square is that of Madison Square Garden, one of the city's largest buildings devoted to amusement. The amphitheatre is used for horse shows and circuses, but it is chiefly known for the boxing matches staged there. It contains also a theatre, a concert hall and ballroom, a restaurant, and a roof garden.

**Madoc or Madog** (c. 1150-80). Traditional Welsh discoverer of

America. He was one of the young-  
 er sons of Owain Gwynedd (d. 1170)  
 and, on disputes as to the succession,  
 is said to have sailed to the west  
 in ten ships with 300 men. The  
 earliest mention of him is in a mid-  
 fifteenth cent. poem, and it was  
 about a century later that his voy-  
 age was associated with the dis-  
 covery of America. His story forms  
 the subject of Robert Southey's  
 long narrative poem, *Madoc*, pub-  
 lished in 1805.

**Madonna** (Ital., my lady).  
 Word specifically applied to any  
 representation of the Virgin in  
 Christian art. Such representations  
 date from the Catacombs, and the  
 Madonna was the dominating  
 theme in painting until the end of  
 the 17th century. The Italian  
 artists excelled in the treatment of  
 this subject; the Madonnas of  
 Raphael, Leonardo da Vinci, Ber-  
 nardino Luini, Titian, Botticelli,  
 and Giorgione being world-famous.  
 Murillo's Spanish Madonnas rival  
 the Italian in gracious beauty. In  
 addition to those illustrated on page

5389, other famous Madonnas illus-  
 trate various articles, e.g. S. Anne,  
 Art, Assumption, Byzantine Art,  
 Carpaccio, Francia.

**Mad Parliament.** Derisive  
 name given by the court party to  
 the parliament which met at  
 Oxford in June, 1258. The country  
 was roused to anger by the extra-  
 vagance of Henry III., and by the  
 favours he showed to his alien  
 friends, and the parliament, which  
 consisted only of barons, was re-  
 sponsible for the reforms known as  
 the Provisions of Oxford (*q.v.*).

**Madras.** State of India. It  
 occupies the major portion of the  
 Deccan peninsula, and comprises  
 three sections, a portion of the  
 Malabar coast on the W., the  
 whole of the Coromandel coast on  
 the E., and a considerable area in  
 the plateau S. of Hyderabad and  
 Mysore. The edges of the Deccan  
 plateau, the Eastern and Western  
 Ghats, meet in Madras in the  
 Nilgiri Hills. South of them the  
 Palghat Gap is a 16-m.-wide  
 break in the continuity of the W.  
 Ghats. The rivers of the Malabar  
 coast are short, and relatively un-  
 important. The main rivers of the  
 S. Deccan flow from the W. Ghats  
 across the peninsula; only the  
 lower courses of the Godavari and  
 Kistna, and the middle and lower  
 sections of the Cauvery, are in  
 Madras. None of the smaller rivers  
 is navigable, but nearly all are  
 used for irrigation. The Laccadive  
 Islands to the S.W. are adminis-  
 tered by Madras.

The whole of the state has a  
 hot climate; the W. has a regular  
 heavy rainfall, the monsoon; the  
 E. has somewhat uncertain rains  
 from the monsoon in the N., and  
 from the N.E. trades during the  
 cooler months in the S.; the inland  
 areas have scanty rain. On the lower  
 levels the temperature varies from  
 about 75° F. in Jan., the coolest  
 month, to about 88° F. in May,  
 the end of the hot dry season.

Beryl, corundum, graphite,  
 manganese, and mica are the chief  
 minerals, while gold, iron, copper,  
 lead, etc., are also found.

The fauna includes monkeys,  
 tigers, leopards, cheetahs, hyaenas,  
 wild dogs, wild pigs, wolves,  
 jackals, badgers, bats, porcupines,  
 elephants, gaurs (bison), various  
 species of antelope, anteaters,  
 humped domestic oxen or zebu,  
 numerous birds—peacocks, quail,  
 grouse, doves, etc.—snakes, tur-  
 tles, frogs, ants, wasps, bees, etc.

Palms, banyans, papaws, tam-  
 arinds, bamboos, tree ferns, san-  
 dalwoods, satinwoods, rosewood,  
 teak, and ebony trees are common;

the forests cover some 20,000 sq. m. The palms yield copra, jaggery, and betel nuts.

The chief languages are Telugu in the N.E., Tamil in the S.E., and Malayalam in the W., three of the principal Dravidian tongues. The animistic hill peoples are mainly pre-Dravidians; the majority of the most civilized folk are Dravidians. Eighty-nine p.c. are Hindus. Three main roads run from Madras city to Calcutta, to Calicut in Malabar, and to the boundary of Travancore. The Madras and S. Mahratta rly. and the S. Indian rly. connect the capital with the big centres in and beyond the province. The Buckingham Canal, a salt-water navigation canal, extends for 261 m. S. from Madras.

The chief crops are rice, grown on the deltaic lowlands of the E., the alluvial stretches of the W., and inland wherever sufficient water can be obtained, millets, both kambu and oholam, and ragi; the latter are the food grains of the peasantry. The sugar-canes, tobacco, tea, coconut palms, and rubber trees, pulses, spices such as pepper, ground-nuts, castor-oil plants, plantains, cover only a third of the cultivated area. Weaving on handlooms is a declining industry, although the fine cottons and silks, muslins and

satins excel in delicacy the product of European factories.

In addition to Madras city, towns with populations exceeding 100,000 are Madura, Trichinopoly, Coimbatore, Salem, and Calicut; those over 75,000 are Bezvada, Guntur, Mangalore, Tuticorin, Cocanada. There are also 16 towns each with a population exceeding 50,000.

The main events in the history of Madras date from the arrival of Vasco da Gama in 1498. In 1640 Fort St. George, the modern Madras city, was erected on behalf of the East India co.; by that date English, Portuguese, Dutch, and Danish factories were in existence, and French settlements followed in the next few years. In 1741 Duplex became governor of Pondicherry; five years later Madras surrendered to a French fleet under De Labourdonnais, and the conflict between French and English culminated in the victory of Wandiwash in 1760. In 1780 the first, in 1790 the second, and in 1799 the third Mysore wars were waged against Tippoo, who was slain at Seringapatam.

Tippoo's possessions were parcelled out. Kanara, Coimbatore, and Wynaad became British; the Nizam's portion, Anantapur, Bellary, Cuddapah, and Kurnool were

ceded to the British the next year, 1800. The province remained part of British India until the transfer of power in 1947. Banganapalle was merged in Madras state 1948. Area 125,807 sq. m. Pop. 49,341,000.

**Madras.** City of India, cap. of the state, and govt. h.q. during the cool weather. It is situated on the Coromandel coast, and its artificial harbour has helped to make it the fifth seaport of India and the chief port of the Deccan.

The city has grown up round Fort St. George, a trading settlement of the East India co. founded by Francis Day in 1640; the fort and S. suburbs were the European quarters, which now lie in Egmore, Chetpet, Kilpauk, etc.; N. of the fort lay Black Town which since 1905 has been called George Town and is now the commercial centre of the city. George Town and Triplicane are densely peopled, and the latter contains the chief Hindu temples. Napier, Robinson, and the People's Parks are the chief open spaces in addition to the island, an open space between two arms of the Cooum river, near the fort. The Marina, along the sea front, contains the Marine Aquarium and Madras University buildings. S. Thomé, S. George's, and the Roman Catholic cathedrals are historic buildings. S. Mary's is the



Madras, India. 1. Central station. 2. Hindu temple in the China Bazaar. 3. View from the roof of the Bank of India, showing the High Court with the Christian College on the right. 4. The High Court



earliest English church in India (1680), S. Andrews is the Scottish kirk (1821). The Observatory dates back more than a century; it sets the time for India and Ceylon, and issues weather reports and storm warnings. The memorial hall, museum, Connemara public library, and Victoria memorial building are notable edifices. Government house, first acquired by the East India co. in 1752, was the governor's residence until 1947, when it was made over to the government for the accommodation of the legislature.

Four main rlys. join the city with Calcutta, Bombay, Calicut, and Tuticorin. The harbour, which is entirely man-made, is unsafe during storms, and the port suffers somewhat from competition with the minor ports of the Deccan. Madras exports the produce of the state, chrome ore, cotton, oil seeds, and hides, and imports machinery, coal, grain, and timber. There are no great manufactures. Pop. 998,000. In the First Great War Madras was the only Indian city to come under enemy attack, when it was shelled by the German raider *Emden* in 1914.

**Madras, UNIVERSITY OF.** This university, founded in 1857, was formerly purely an examining body, but in 1923 it was reorganized as a teaching and residential university with control over the quality of the teaching given by the fifteen constituent colleges and the thirty-one affiliated colleges of the university in the province of Madras. Of the constituent colleges, six prepare candidates for degrees in arts and science, four in teaching, one in law, two in medicine, one in engineering, and one in veterinary science. The endowment funds amount to about £60,000.

**Madre de Dios** (Sp., Mother of God). River of S. America. Called by the natives Amaru-Mayu, and the chief affluent of the Beni (*q.v.*), it rises in the S.E. of Peru, flows N.E. through Bolivia, and empties into the Beni at Rivera Alta, not far from the confluence of the latter with the Mamoré. It has a course estimated at 900 m.

**Madre de Dios.** Department of S.E. Peru. It was created in 1912, and named after the river. Its capital is Maldonado. With an area of 58,827 sq. m., the estimated population is 4,950.

**Madrepore** (*Madreporearia*). An order of the Anthozoa consisting of the true corals. The polyps secrete carbonate of lime in the

form of stony plates against the folds of their skin and in a solid form below their base, thus causing them to rise. The madrepores are the principal builders of coral foundations. See Coral.

**Madrid.** Central prov. of Spain. It is bounded W. by Avila and Segovia, E. by Guadalajara, and S. by Toledo. Elevated and largely mountainous, the Sierra de Guadarrama running along its N.W. boundary, the climate is bleak and cold in winter and very hot in summer. Rainfall is deficient, ex-

cept on the heights; the S.E. part is the best watered and fertile, producing vines, fruit, cereals, oil, esparto, and vegetables. There are quarries of granite and freestone, and the mountains contain minerals, which, however, are not fully exploited. The forests in the N. and N.E. yield timber for building purposes, charcoal, and firewood. Agriculture and horticulture are the chief occupations. Beyond the capital there are few large towns, and the prov. is sparsely inhabited. Area 3,089 sq. m. Pop. 1,171,428.

## MADRID: CAPITAL OF SPAIN

Alfonso Lopez, Spanish Writer and Translator

*The history and physical features of the Spanish capital are here described. The Prado museum has its own entry, and the relationship of Madrid to the country as a whole is described under Spain*

The capital of Spain and of the prov. of Madrid, the city of Madrid stands on a plateau, at an elevation of 2,400 ft., surrounded by an extensive, arid plain, S. of the Guadarrama Mts., 41 m. direct N.N.E. of Toledo.

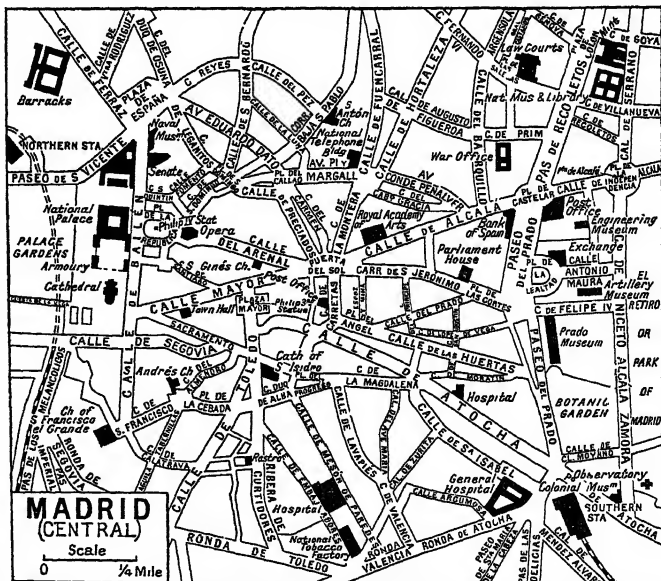
The Manzanares river, which is waterless during the summer, is spanned by several fine bridges. The centre of the peninsular rly. system, the city communicates with France by two lines and with Portugal by three. Madrid has the most variable climate of any town in Spain, and its death rate is high.

Exposed at different seasons to icy winds and scorching sun, the extremes of temp. are not only seasonal, but daily, the variation sometimes exceeding 50° in one day.

Almost surrounded by public parks and gardens, Madrid has many wide streets, large squares, avenues, and promenades; but in the older parts of the town the streets are narrow, dingy, and badly paved. The chief square, Puerta del Sol, is in the centre of the city and is the focus of activity. From it radiate ten streets, the finest being the Calle de Alcalá, which traverses the magnificent boulevard, del Prado, flanked by handsome squares, public buildings (including the Prado museum,

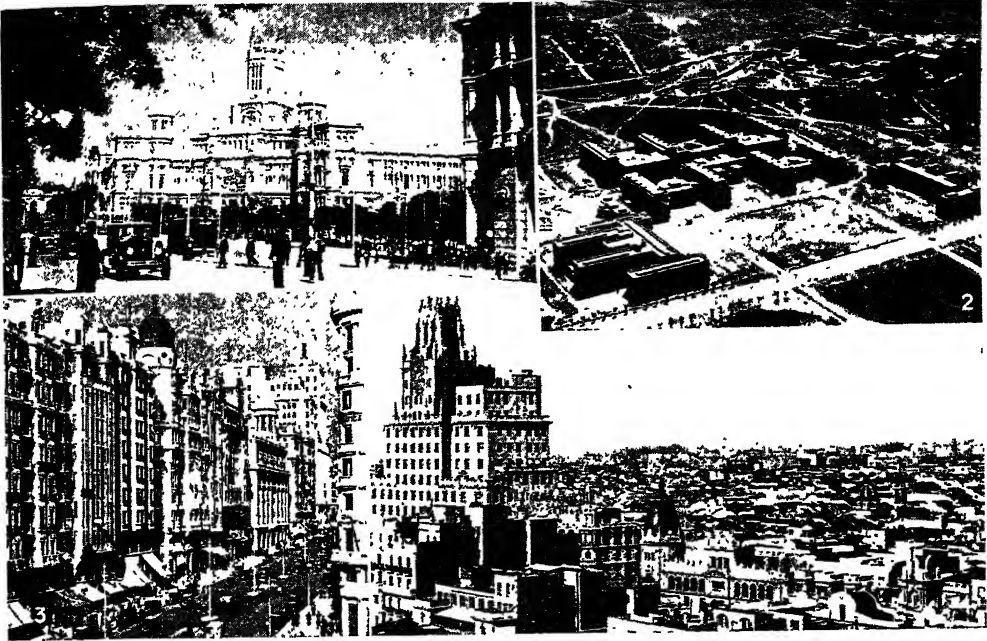


Madrid arms



Madrid. Plan of the central part of the Spanish capital, indicating positions of principal buildings





Madrid, Spain. 1. General post office, centre, and right, pharmacy, medical, and dentistry buildings respectively; in the background (right) are hospital blocks. 2. University city, in course of construction to the N.W. of the capital. 3. Avenida Margall, a shopping street. 4. General view of the city, with the national telephone building on the left

amous gallery of painting and sculpture, and the Academy of the Spanish language), and by botanical and other gardens. The chief park, the Retiro, lies to the E. of this district.

Debouching W. from the Puerta del Sol, the Calle del Arenal leads to the Plaza de Oriente (la Republica), the largest square, and to the royal palace. The square contains a beautiful fountain with bronze lions and the striking equestrian statue of Philip IV, surrounded by 44 other statues of Visigothic and Spanish kings. The palace, a massive six-storied building, 500 ft. square by from 80 ft. to 165 ft. high, faces the Plaza de Armas, with the Armoury, a world-renowned collection of arms and armour. In another open space rises the new cathedral, founded in 1883. To the N. of the palace are the ministry of marine with naval museum, and the senate; to the W., sloping to the Manzanares, are the palace gardens, themselves flanked with avenues, and connected by bridges with the Casa de Campo, an extensive park.

Another important street, running W. from the Puerta del Sol, is the Calle Mayor; it passes near the Plaza Mayor, a spacious square, with a famous equestrian statue of Philip III. This square was long used for ceremonies, tournaments,

bull-fights, executions, autos-da-fé, horse-races, etc. Here, in 1812, after the British entry into the city, the constitution of Cadiz was proclaimed. Here also occurred several riots, and the Federalists, in 1873, removed the statue from its pedestal. On the S. side of the Calle opens the Plaza de la Villa, with the town hall. The Carrera de San Jeronimo, running E. from the Puerta, leads past the Palacio del Congreso, or parliament house, through the Plaza de las Cortes to the Prado.

The building of the national library and museums, in the Paseo de Recoletos, contains one of the most important libraries in Europe, with over 1,000,000 vols.; the archaeological museum, containing prehistoric and ethnological objects; and the museum of modern art with an extensive collection of paintings and sculptures. In the Retiro or park of Madrid, with numerous fountains and statues, and a small zoological garden, is a colonial museum and library. The university, transferred from Alcalá de Henares to Madrid, 1836-37, has a valuable collection of books and MSS. A vast university city, to the N.W. of the capital, founded in 1928, was still in course of construction 20 years later.

The greatest development of Madrid dates from 1914. Since then

a great new artery, the Gran Vía, running from E. to W., and the new general post office, one of the largest and finest buildings in the Prado, have been completed; new parks and squares have been laid out; the Manzanares river has been canalised, and three underground rly. lines totalling 20 m. in length have been constructed.

The city contains 23 hospitals, many orphanages, asylums, and other philanthropic institutions; a chamber of commerce and industries, guilds, workmen's clubs and associations. The churches are of little antiquarian interest or architectural merit. San Isidro, the old cathedral, dates only from 1651. Among Madrid's many industries are the manufacture of tobacco, leather goods, furniture, fans, porcelain, glass, carpets, tapestry, carriages, chemicals, corks, soap, paper, plate, guitars, jewelry, confectionery, cards, perfumes, etc. There are works connected with iron, copper, and zinc. Its book and publishing trade is important.

Latin and Arab scribes mention Medina Majerit, as they called Madrid, as existing in the 10th cent. It was recaptured from the Moors in 1083. At first a frontier fortress and royal hunting-lodge, it became a residence of the kings. It received a charter in 1202, and the Cortes assembled there in 1309.

Philip II made it his capital in 1561. It had then only 30,000 inhabitants, but the city quickly grew, although up to about 1650 it presented but a poor appearance. Even up to the reign of Philip IV (d. 1665) Madrid was unpaved. The uprising of the people of Madrid on May 2, 1808, was the beginning of the Spanish War of Independence against Napoleon. Madrid was captured from the French by the Allies under Wellington in 1812. Its monasteries were suppressed in 1836. Rlys. were introduced in 1850, and an abundant water supply was laid on in 1858.

#### In the Civil War

When Gen. Franco led a rising of the Foreign Legion in Morocco, July, 1936, the Madrid garrison, like most of those in Spain, rose in revolt, July 17, but was overpowered, July 19, by a workers' militia raised by the govt. Franco's forces captured Badajoz, Irun, and San Sebastian, and advanced on the capital in a convergent attack of four columns (the "fifth column" being his sympathisers inside the city). The government moved to Valencia on Nov. 6, and next day the siege of Madrid began; it lasted until March 28, 1939, when the city surrendered. The defence was reinforced Nov. 8, 1936, by the International Brigade (*q.v.*). Fighting, heaviest during the first six months, wrecked the suburb of Carabanchel and much of the university city, but the rest of Madrid suffered lightly, although subjected to bombing by Italian and German aeroplanes as well as to artillery bombardment. The last remnants of Republican re-

sistance ceased shortly after the fall of Madrid; and on Oct. 18, 1939, Franco transferred his government from Burgos to the capital. He reopened the partly restored university city Oct. 12, 1943. Pop. (est. 1946) 1,171,428.

**Madrigal.** Musical composition with secular words, in contrapuntal style. It is used for voices in three or more parts, without separate instrumental accompaniment. Some madrigals had the label "Apt for viols or voices," indicating that the instruments could take the place of, or assist, the voices. The Netherlands school of composers was early in this field in the 15th century, when it was represented by Okeghem, Tinctor, Hobrecht, Josquin des Prés, and others. These were followed in the 16th cent. by Arcadelt, Verdelot, Waelrant, Willaert, and Orlando di Lasso. The Italian school, a little later than that of the Netherlands, included Festa, Palestrina, Anerio, Marenzio, Croce, the Gabriellis, Orazio Vecchi, Gastoldi, and others. In England the madrigal reached its climax in the Elizabethan and early Stuart periods, and was associated with the names of Byrd,

Morley, Weelkes, Este, Ford, Wilbye, Dowland, Benet, Hilton, and Orlando Gibbons. *See Music.*

**Madsen Gun.** Type of light machine-gun or automatic rifle, invented by a Danish engineer and named after the Danish war minister. The gun depends for its action on the recoil of the barrel. In appearance it is similar to an ordinary rifle, and may be fired from the shoulder, either as an automatic or for single shots. The barrel is fitted inside a perforated casing; the cartridges are fed in segment-shaped magazines, each holding 25 rounds; the magazine is clipped vertically to one side of the breech mechanism-chamber. *See Machine-Gun.*

**Mad Tea Party.** Episode in Alice's Adventures in Wonderland, by Lewis Carroll. Alice finds the Mad Hatter, the March Hare, and the Dormouse having tea, and their conversation, which reaches a kind of insane logic, has given rise to many quotable phrases and allusions. *See Alice's Adventures*, illus. p. 303.

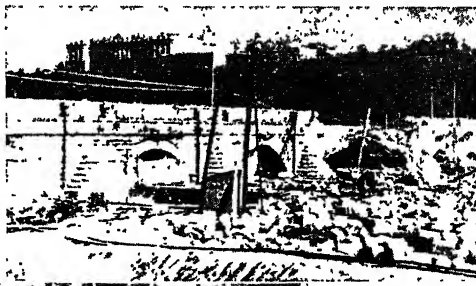
**Madura.** Peninsula of Indonesia. It is situated to the N.E. of Java, being bounded to the S.

by the Strait of Madura. With some insular dependencies it formed a residency of Java; it was autonomous 1948-50, then became part of the republic of Indonesia. The Madurese are fishers and cattle rearers, who

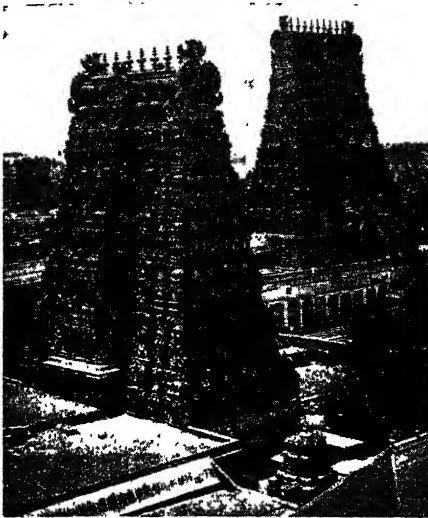
speak a distinctive tongue. Area, 1,700 sq. m. Pop. 1,800,000.

**Madura.** District and town of India, in Madras state. The district is situated in the middle of the S. portion of the Deccan. To the W. are the Western Ghats; it is drained by the Vaigai river. The Periyar river flows down the Ghats to the Arabian Sea; a dam has been constructed, and the conserved water is led through a tunnel in the mountains to irrigate Madura. Of the total area, 60 p.c. is cultivable, but only three-quarters of this is tilled; the chief crops in cultivation are food grains, rice, and cotton.

Madura town is situated on the Vaigai. The capital of the ancient Pandyan kingdom, it is an historic town and a great religious centre. The great temple of Sundaeswara, with a hall of a thousand pillars, is the chief building. Brass vessels



Madrid: scenes in the Civil War. Lower, bomb devastation at the entrance to the underground station in the Puerta del Sol. Upper, ruins of the Segovia bridge over the R. Manzanares



Madura, India. Two of the ten magnificent carved gate towers of the temple of Sundaeswara, which covers an area of 25 acres

and cotton cloths are manufactured, and textile mills have been established. District: area, 4,883 sq. m.; pop. 2,444,600. Town: pop. 239,144. See India.

**Madvig**, JOHAN NICOLAI (1804-86). Danish classical scholar, born on the island of Bornholm, Aug. 7, 1804. He was professor of Latin language and literature at Copenhagen, 1829-48, and then minister of public worship and education until 1851. He then resumed his professorship, retiring in 1876, and dying Dec. 12, 1886. He had a European reputation as one of the foremost textual critics, especially of Cicero and Livy. His most important works were an edition of Cicero's treatise *De Finibus* (On the Chief Good), 1839, Latin Grammar, 1841, and a text of, and emendations to, Livy. The Constitution and Administration of the Roman State, 1881, written in a more conservative spirit than some previous works on the subject, was less favourably received.

**Maecander** (mod. Menderes). In ancient geography, river of Asia Minor. Rising near Celaenae (Dineir) in Phrygia, it flows W. with a sinuous course that has become proverbial, and after being joined by the Lycus (Churuk Su), traverses Caria, and discharges into the Icarian Sea. Meander, both verb and noun, is used literally and figuratively in reference to a winding course.

**Maecenas**, GAIUS CILNIUS (c. 68-8 B.C.). A Roman patron of letters. Of an old Etruscan family, he was a man of great wealth

and high culture, and became the intimate friend and adviser of the emperor Augustus. Virgil and Horace were two of many men of letters under great obligation to Maecenas, whose name has become a popular synonym for a generous patron of the arts and literature.

**Maeldun**. Hero of a series of ancient Irish tales narrated in the form of an account of a wonderful voyage. Maeldun is the son of Ailill of the sept of the Owens of Aran and a nun; he is brought up by a queen, friend of his mother, and arrives at man's estate before he learns the story of his birth and of how his father had

been slain. He sets out to find his father's murderer, and visits the most marvellous islands on his voyage. Tennyson tells some of the tales in his poem, *The Voyage of Maeldune*.

**Maelstrom** (Dutch *malen*, to whirl: *stroom*, stream). Strong tidal current in the channels S. of Moskenesø, an island in the Lofoten group, N.W. Norway. Formerly reputed to be a whirlpool which meant certain death to the mariner caught in its eddy, as in a tale by Poe, it is dangerous only at certain states of the tide when a N.W. wind blows fiercely.

**Maenad** (Gr. mad woman). In Greek mythology, one of the alternative names for the Bacchantes or frenzied female companions of the god Bacchus or Dionysus.

**Maerlant**, JACOB VAN. Flemish poet of the 13th century. He was probably born on the island of Voorne and died near Bruges, having been employed as parish clerk at Maerlant and later at Damme. He wrote romances after the fashion of the time, but soon struck a more serious vein and wrote scientific and historical books. One of the most learned men of his day, he was called the father of Dutch literature. His famous rhymed Bible, 1271, led him into trouble with the Church. In 1283 he began a voluminous work, which his death left unfinished, an edition of *The Mirror of History* by Vincent of Beauvais.

**Maes**, NICHOLAS (1632-93). Dutch painter. Born at Dordrecht, he was a pupil of Rembrandt. His

early work shows delicacy of feeling; two examples are *The Reverie* and *Grace*, in Rijksmuseum, Amsterdam. He then painted life-size figure subjects, such as *The Card Players*, in the National Gallery. Turning to smaller genre and portraits, during 1655-67 he produced



Nicholas Maes, Dutch painter

his best work in this direction, such as *The Dutch Housewife*, *The Idle Servant*, and *A Man's Portrait*, all in the National Gallery. The last part of his life was occupied with fashionable portraits. He died in Amsterdam.

**Maeshowe**. Largest prehistoric sepulchral mound in N. Britain, near the stone circles of Stenness, Orkney (q.v.). It is a truncated cone 36 ft. high, 92 ft. in diameter, with a 40-ft. ditch. A passage 54 ft. long leads from the W. to a chamber 15 ft. square, with a false-barrel roof of unhewn claystone slabs and three side cells. The walls bear Norse designs and 900 runes, scored (1152) by Viking pilgrims to Jerusalem.

**Maesteg**. An urban district of Glamorganshire, Wales. It stands on the Llyfnu river, 8 m. N. by W. of Bridgend, and is served by rly. Maesteg owes its existence to the development of the S. Wales coal-field. Pop. 25,552.

**Maestoso**. Italian term used in music, meaning in a stately or majestic manner. See Musical Terms.

**Maestricht**. For this town in the Netherlands the form preferred in this work is Maastricht.

**Maestrichtian**. In geology, a group of soft yellowish limestones containing fossil corals and bryozoa of Upper Cretaceous Age. The group is named from its occurrence near Maastricht in Holland.

**Maeterlinck**, MAURICE POLYDORÉ MARIE BERNARD, COUNT (1862-1949). Belgian poet, dramatist, and mystic. He was born at Ghent, Aug. 29, 1862, educated at the Jesuit college of S. Barbe, and studied and for a time practised law in Ghent. In Paris he came under the influence of Villiers de l'Isle-Adam (q.v.) and the symbolists. In 1889 he published a first volume of verse, *Serres*



Maurice Maeterlinck, Belgian poet  
Elliott & Fry

Chaudes (Hot-houses). Four plays followed in 1890, of which *La Princesse Maleine* was the subject of a notable eulogy in the *Paris Figaro* by Mirbeau. *Pelléas et Mélisande*, 1892, later formed the libretto for Debussy's opera. There followed *La Mort de Tintagiles*, 1894; *Monna Vanna*, 1902; *L'Oiseau Bleu*, 1909 (*The Blue Bird*); translations from Ford, Emerson, Novalis, and Ruysbroeck. In prose Maeterlinck wrote *Le Trésor des Humbles*, 1896; *La Sagresse et la Destinée*, 1898; *La Vie des Abeilles*, 1901; *Collected essays*, *Le Double Jardin*, 1904, and *L'Intelligence des Fleurs*, 1907; *La Mort*, 1913. His play, *The Burgomaster of Stilemonde*, 1920, dealt with Belgium under German occupation 1914-18.

He described his plays as written for marionettes, and his prose as verse in solution. As a rule his plays depend rather on mood than movement, suggestion of the event rather than its presentation; they are attempts to clothe mystical conceptions in concrete form. His chief absorption earlier was with the mystery of matters beyond life; but in the 20th century he showed a reaction from mysticism. The marks of his method have been described as parallelism, symbolism, suggestion, and the use of realistic means for romantic effects. In 1911 he was awarded the Nobel prize for literature. In 1914 his works were placed on the papal index. He was made a count in 1932, and died at his home in Nice, May 6, 1949. *Consult* *Life and Works*, J. Bethell, 1913.

**"Mae West."** Life jacket used by airmen in the Second Great War. Worn by all air crew, the jacket was coloured bright yellow to make it easily distinguishable from the air, and was inflated by the wearer. As it gave him a rather bulky appearance, it received the nickname of "Mae West," after the U.S. actress of that name with the well-curved figure. *See* *West, Mae*.

**Mafeking.** Town of Cape Province, S. Africa. It is 490 m. S.S.W. of Bulawayo, and 189 m. W. by N. of Johannesburg by rly. Here in an imperial reserve are the administrative h.q. and commercial centre of the Bechuanaland protec-



Mafeking, South Africa. Town Hall, opened in 1904; on the left is the Siege Memorial

By courtesy of the Commissioner for South Africa

torate. It was the starting point of the Jameson Raid, 1896. Pop. 5,081. A mile away is the native town on Molopo river. This is administered by Daralong chiefs, who are free from European control, and has a pop. of about 3,000.

**Mafeking, SIEGE OF.** Operation during the S. African War. Lasting from Oct. 13, 1899, to May 17, 1900, the defence of the little frontier town by Col. R. S. S. Baden-Powell aroused intense interest, and the news of its relief led to spontaneous wild jubiliations in London and elsewhere, bringing into common use for at least a decade the new verb "to maffick." The garrison consisted of 700-800 trained troops, assisted by a few hundred townspeople, while the Boer forces under Cronje numbered at first about 10,000, supplied with modern breech-loading guns. The attack was conducted on leisurely lines, and though the town was shelled with some persistency its

outer defences were pierced only once, May 12, and the affair resulted in the capture of 97 Boers. On May 1 the town was relieved by Col. Manon and Col. Plumer, who had joined forces. The casualties of the garrison were 35 killed, 101 wounded, and 27 prisoners. Boer losses were estimated at 300. What appealed most to the public at home was the air of high-spirited audacity with which Baden-Powell conducted the defence and organized the garrison. *See* *South African War*; *consult* *The Siege of Mafeking*, J. A. Hamilton, 1900; *Mafeking*, a Diary of the Siege, F. D. Baillie, 1900.

**Maffei, FRANCESCO SCIPIONE, MARQUESS OF (1675-1755).** Italian archaeologist and dramatist. Born

at Verona, June 1, 1675, he was author of the famous tragedy *Me-ropé*, produced at Modena in 1713, and translated into English in 1740. As archaeologist his greatest work was *Verona Illustrata*. He died in that city, Feb. 11, 1755.

**Mafia.** Name of a Sicilian secret society. Its origins are traced to the ill-disciplined forces of gendarmerie instituted in Sicily by Ferdinand IV in the early part of the 19th cent., and in general objects the body was similar to the Camorra. When the society was an organized whole, its members, known as Mafiosi, were admitted after trial of skill with the dagger, accepted a primitive code of honour, and were sworn to defy all established forms of justice. Their deeds partook of the nature of the vendetta. Reaching its highest pitch about 1860-70, the Mafia carried on robbery, smuggling, and murder; strongest in and around Palermo, it showed itself also in Italy, and attempts at suppression were made in 1874-75. In 1902 two Mafiosi were sentenced at Bologna to 30 years' imprisonment for murder. Outrages attributed to the Mafia, some of whose members were driven abroad, took place in the U.S.A., notably at New Orleans in 1890 and 1895. The society was broken up in 1928 by Mussolini and the prefect of Palermo. *See* *Camorra*; *Vendetta*.

**Mafia.** Island lying off the coast of Tanganyika Territory between Kilwa and Dar-es-Salaam. Formerly part of the territories of the sultan of Zanzibar, it was



Francesco S. Maffei, Italian archaeologist



"Mae West." Fleet Air Arm pilots in the life jackets which were given this nickname

occupied by Germany in 1890 and was captured by the British in Feb., 1915. The area is 178 sq. m. See Tanganyika Territory.

**Magadha.** Ancient kingdom of India. It lay S. of the middle Ganges in Bihar, the capital being first Rajgir near Gaya, and afterwards Patna. In the 4th century Magadha acquired the upper Ganges basin. Chandragupta (*q.v.*), founder of the Maurya dynasty, was the first in history to establish an Indian empire, conquering all the N. from sea to sea, and making the Hindu Kush his frontier against the Greeks. On the death of his grandson Asoka (*q.v.*), the empire decayed, and was destroyed 184 B.C.

**Magadi.** Lake in the S. centre of Kenya colony. It is connected with the Uganda rly., and contains enormous deposits of carbonate of soda. The lake is 30 m. long from N. to S., and forms a basin of internal drainage. See Alkali.

**Magalhães.** FERNÃO DE (c. 1480-1521). Portuguese navigator, more generally known as Ferdinand Magellan (*q.v.*).

**Magallanes.** Territory of S. Chile. It is all that part roughly S. of lat. 48°, above which lies Aysen. It includes all the islands of the W. and S. coasts, all of the coasts of the Strait of Magellan, half of Tierra del Fuego, and most of the Fuegian Archipelago. The narrow strip of mainland is mountainous and deeply indented; the islands are separated by deep channels and rocky coasts; and the fjords and glaciers resemble those of Norway. Coal, copper, and gold are found, and timber is felled. Foxes and other furred animals are bred. Area, 52,271 sq. miles. Estimated pop. 48,801.

**Magallanes.** Seaport town of Chile, capital of Magallanes territory. Formerly known as Punta Arenas (Span., sandy point), it stands on the E. coast of Brunswick Peninsula, in the Strait of Magellan, and is the most southerly town in the world. A coaling station and a port of call for ships passing through the strait, it is a distributing centre for S. Patagonia and the Falkland Islands. In the vicinity are coal, copper, and gold mines. Timber, wool, hides, frozen meat, and tallow are exported. The town has a British club, golf course, and facilities for ice sports. Pop. 33,130.

**Magangue.** Town in the N.W. of Colombia. Standing near the confluence of the Magdalena and Cauca rivers, it is the principal port for the products of the savannahs

of Bolivar dept., *e.g.* cattle, coffee, cheese, and fruit. Pop. 17,000.

**Magazine** (Arabic). A term, originally meaning store, now used in a military sense. It means:

(1) The chamber or reservoir of a rifle into which a number of cartridges can be placed, and from which they are automatically fed into the chamber singly.

(2) The removable clips, boxes, or drums, in which cartridges are placed for use in automatic pistols and rifles, and some machine-guns.

(3) The buildings in which explosives or ammunition are stored. These buildings are generally of special construction and subject to stringent regulations. They must be fireproof and provided with efficient lightning conductors, whilst no one is allowed to approach the site with matches, smoking materials, or a light or fire of any description. If the magazine contains bulk explosives, all persons entering the building must either change their shoes, or put on overshoes, so that grit will not be introduced. The construction of magazines is such that, in case an accidental explosion occurs, the main force will not be exerted in a lateral direction. Some are built underground.

(4) The compartments on board naval vessels where the ammunition is stored.

**Magazine.** Form of periodical literature intended to provide varied information and amusement. In general usage the term usually implies a monthly publication, but even so there is a clearly accepted distinction between the magazine and the serious review. At the same time, certain private periodicals are commonly spoken of as magazines, *e.g.* school magazines, parish magazines, and the journals of business houses. By analogy the varied feature pages of a newspaper are sometimes called magazine pages.

The history of the magazine may be said to begin with the publication of *The Gentleman's Magazine*, 1731. During the second half of the 19th century the magazine underwent a great transformation, due first to the growing vogue of the short story, and secondly to the development of process illustration. The turn of the century saw the peak of the illustrated magazine's popularity, with such periodicals as (*in Great Britain*) *The Strand*, *The Windsor*, *The English Illustrated*, *The Royal*, *Cassell's*, *Pearson's*, *Macmillan's*, etc., and (*in the U.S.A.*) *Harper's*, *Lippincott's*, *Munsey's*, etc., sup-

plying month by month, usually for sixpence, a generous assortment of popular information and high-class fiction for home and family reading, illustrated by photographs and by well-known artists in black-and-white. Many households took pride in an array of bound volumes of their favourite magazines, for at that period all advertising matter was rigidly excluded from the sequence of pages and was therefore denied permanence. There were also several famous magazines more specialised in their appeal, *e.g.* *The Quiver* (religion), *The Wide World* (adventure), *C. B. Fry's* (sport), *The Studio* (art), *The Bookman* (literature), as well as those for boys (*The Captain*), girls (*The Girl's Realm*), and younger children (*Little Folks*), and many others.

Later developments were the all-fiction magazine, and an increase in page size to accommodate more striking pictorial display and a more effective use of advertising matter. The principle of the "turn-over" was generally adopted, that device, to which the public gradually became accustomed, by which magazine features are continued at the back of the book among the advertisements. On the other hand, the pocket-size format also became popular during the 1930s, as seen in such publications as *The Countryman* and *Lilliput*. As the result of the paper shortage during and after the Second Great War, several magazines adopted the pocket size, *e.g.* *The Quiver*, *The Boys' Own*. Colour printing gave additional attraction to the appearance of many magazines. From America came new ideas in specialisation as seen in such ambitious publications as *Esquire* and *Fortune*. But the chief development between the two Great Wars was the great increase in the number and quality of magazines directly appealing to women readers. Such a periodical as *Woman's Journal* may be considered representative of the very best type of magazine production in which old traditions are successfully blended with up-to-date processes.

**Magdala** or **MAKDALA.** Fortress of Abyssinia. It stands about 150 m. S.E. of Gondar, on a plateau over 9,000 ft. high. This plateau, less than a mile square and protected by precipices, was fortified by the emperor Theodore. In 1860, having seized the British consul and other foreigners, he carried them off to Magdala and, in spite of repeated requests, refused to release them. An expedition was



therefore fitted out under Sir Robert Napier, and on April 13, 1868, the fortress was taken by storm. It was then utterly destroyed. Napier was created Lord Napier of Magdala. The fortress was afterwards rebuilt, and is now a position of strategic importance. Under Italian occupation, 1936-41, a motor road was built to link it with Dessie.

**Magdalen.** Small group of islands of N. America. They lie about 50 m. N. of Prince Edward Island in the Gulf of the St. Lawrence, belong to Quebec prov., and were known in early times as Les Îles Ramées. At low tide Amherst, Grindstone, Allright, Coffin, Goose, and East islands are connected by sand-bars. Entry and Deadman's are distinct islets. Except the latter, all contain red sandstone cliffs and hills. The people, mainly of French origin, chiefly depend on lobster fishing and canning. Coffin island, which curves round Pleasant Bay, is 35 m. long. The Bird Isles form a sanctuary for hosts of sea birds. Pop. of group, 13,300.

**Magdalena.** Largest river of Colombia, S. America. It rises in the S.W. of the republic, near the Pic de Azacar, at the junction of the Central and E. Cordilleras, flows N. through the Andean valley, and discharges into the Caribbean Sea by Barranquilla (q.v.), after a course of nearly 1,000 m. The area of its drainage basin is est. at 96,000 sq. m. It is navigable up to Honda, a distance of about 600 m., and a rly. for a short distance from there opens up another navigable stretch of 200 m. to Neiva, but the river is subject to drought.

**Magdalena.** Department of N.E. Colombia. It is bounded N. by the Carribbean Sea, E. by Venezuela, and W. by the river Magdalena. In the N. rises the Sierra Nevada de S. Marta; elsewhere are llanos, lakes, and swamps. Well watered and timbered, the dept. produces bananas, maize, coffee, coconuts, and sugar. The minerals include copper, gold, silver, and coal. Horses and cattle are reared on the grassy uplands. The chief industries are agriculture,



Magdalene College, Cambridge. Founded in 1542, it stands on the left bank of the river Cam

grazing, and mining. The capital is Santa Marta (q.v.). Area, 20,827 sq. m. Pop. 342,322.

**Magdalena Bay.** A bay of Mexico, on the Pacific coast of Lower California. It forms a magnificent harbour, about 40 m. long and 11 m. broad, and is a rendezvous of whalers and a place of naval target practice by U.S.A. warships. The bay is protected partly by Santa Margarita Island.

**Magdalen College.** College of Oxford university. It was founded in 1458 by William of Waynflete, bishop of Winchester, and was dedicated to S. Mary Magdalen. It was for a president, 40 fellows, and 30 scholars, who are called demies. The college is one of the richest and most celebrated in the university. It stands at the E. end of the High Street, and has a deer park and extensive grounds along the Cherwell, including Addison's Walk. The range of buildings includes the tower, on the top of which a Latin hymn is sung at sunrise on May Day; it is an Oxford landmark, and the chapel is famous for the beauty of the choral services. Among Magdalen men were Wolsey, Pole, Hampden, Addison, Gibbon, and Edward VIII. The old society of Magdalen Hall, formerly part of this college, is now Hertford College, details of which appear



Magdalen College, Oxford, arms



Magdalen College, Oxford. The tower, a well known landmark

The college was prominent in 1687, when the fellows refused to accept the R.C. president named by James II. There is a school for boys on the same foundation. Founded in 1480, this has modern buildings in Oxford, close to the Cherwell. The college choristers are educated

here. Another Magdalen College school, an offshoot of this, is at Brackley. See Demy; Oxford; consult Magdalen College, H. A. Wilson, 1899. Pron. Maudlen.

**Magdalene College.** College of Cambridge university. It originated in Buckingham College, originally a Benedictine hostel, which was named after Henry Stafford, 2nd duke of Buckingham. The college was granted by Henry VIII to Thomas, 1st Baron Audley of Walden, who by charter in 1542 refounded the hostel for a master and eight fellows under the title of the college of S. Mary Magdalene. The special treasure of the college is the Pepsian library, which contains the MS. of the famous diary. In addition to Pepys, members have included Cranmer, Ussher, Henry Dunster, first president of Harvard, Kingsley, Parnell, and A. C. Benson. Consult Magdalene College, E. K. Purnell, 1901. Pron. Maudlen. See illus. above.



Magdalene College, Cambridge, arms

**Magdalenian.** Late period of the upper Palaeolithic Age in Europe. In it the climate was cold, the reindeer, bison, and horse flourished, and the mammoth became extinct. The Crô-magnon race, ousting the Solutrian, became modified, and prehistoric art reached its zenith. The flint industry dwindled before the apter use of bone, as in borers, barbed harpoons, spear-throwers, and whistles. Named from the rock-shelter of La Madeleine, Dordogne, the stations extend from Kent's cavern to Russia. With the dominant race may have lived a shorter one which followed the retreating reindeer eastward, carrying with them the culture, still notable for its use of bone, which is preserved among the Eskimo. After



this a transitional (Azilian) period led to the Neolithic age.

**Magdeburg.** City of E. Germany. Capital of the former Prussian prov. of Saxony, it lay after the Second Great War in the Land of Saxony-Anhalt. It is on the left bank of the Elbe, 80 m. S.W. of Berlin. Until 1912 a fortress, Magdeburg up to the



Magdeburg arms

Second Great War was the centre of Germany's inland water transport, one of her most important rly. junctions, and an airport of the first rank. Magdeburg is mentioned in documents as far back as A.D. 805, but it was destroyed during the Thirty Years War except for the church of Our Lady (1070, rebuilt 1220-35) with fine old cloisters, the tower of S. Peter's, one timber-frame building, and the cathedral which, first built 955, rebuilt 1209 after a great fire, and finished only 1520, had two towers 343 ft. high, and contained the tombs of Otto the Great and his wife, Edith of England, and a monument by Peter Vischer of an archbishop. A fine equestrian statue of the 13th century, of Otto, decorated the Old Market.

Magdeburg was again almost completely destroyed during the Second Great War. A huge Krupp plant, the Gruson works—Germany's chief locomotive factory—motor, engineering, and instrument plants, sugar and chocolate factories, etc., and warehouses full of the products of the rich surrounding area—grain, sugar, seeds, foodstuffs and fodder, fertiliser and fuel—made it a target for Allied air attacks, and it was captured by the U.S. 9th army April 18, 1945, only after violent street fighting. It contained many important govt. offices, banks, clerical, scientific and teaching institutions, medical, technical, commercial, engineering and craft academies, museums, libraries, two permanent theatres, learned societies, etc.

Its history goes back to Carolingian days. Under Otto I it became the missionary centre for the Slavonic peoples. It was made an archbishopric in A.D. 963. In 1320 it was granted a constitution, subsequently a model for that of many other towns; its law and legal

procedure were among Germany's earliest and most important legal codes. Accepting the Reformation as early as 1524, and a member of the Schmalkalden league, it was in consequence banned and besieged; deprived of its privileges after surrender, Magdeburg was, after successfully resisting a siege by Wallenstein in 1629, assaulted, sacked, and burned by Tilly, May 20, 1631; 30,000 inhabitants perished during that fire. In the 1648 peace Magdeburg came, as a duchy, to Brandenburg, was rebuilt as a fortress which, however, without a shot, fell to Marshal Ney, 1806, was incorporated with Jerome Bonaparte's kingdom of Westphalia, and reverted to Prussia in 1814. It prospered, especially as a port, more than 5,000 vessels using it in an annual turnover of produce of between 1,000,000 and 1,500,000 tons. Pop. (1949 est.) 240,000.

**Magdeburg Hemispheres.** A device invented c. 1650 by Otto von Guericke of Magdeburg for illustrating experimentally that the atmosphere exerts pressure. The apparatus comprises a pair of hemispherical cups, usually of brass or copper, having edges which fit accurately one in the other. To one of the cups is fitted a cock, and a union for attaching to a screwed nipple on an exhausting pump. The edges of the cups are coated with grease and pressed together, and after exhausting the



Magdeburg, Germany. Pre-war view across the Elbe from the cathedral, looking towards the cathedral

air from the interior of the hemispheres and closing the cock, it is found that they can be parted only with considerable difficulty.

**Magdhaba.** Village of the Sinai peninsula, 100 m. E. of Ismailia and 20 m. S.S.E. of El Arish. In the First Great War it was a stronghold and base of the Turks in their invasion of Egypt. Bombed by British airmen in Nov., 1916, it was the scene of a Turkish defeat by Anzac troops and the Camel Corps, Dec. 23, 1916. Nearly the whole of the Turkish force was either killed or captured.

**Magee, WILLIAM CONNOR** (1821-91). Irish prelate. Born at Cork, Dec. 17, 1821, he was the son of a clergyman there, while his grandfather, William Magee (1766-1831) was archbishop of Dublin. Educated at Kilkenny and Trinity College, Dublin, he was ordained in 1844. Magee settled at Bath in 1848 and at the Octagon chapel made a reputation as a preacher. In 1860 he returned to Ireland as vicar of Enniskillen, and in 1864 became dean of Cork, holding also from 1866 the deanery of the Chapel Royal, Dublin. Bishop of Peterborough from 1868, he was early in 1891 appointed archbishop of York, but died almost at once, May 5. Magee was generally



William Magee, Irish prelate

regarded as one of the finest orators of his day. Consult *Life and Letters*, J. C. MacDonnell, 1896.

**Magellan, STRAIT OF.** Passage connecting the Atlantic with the Pacific, near the S. extremity of S. America. It takes a tortuous course between the Chilean mainland and Tierra del Fuego. Its E. entrance is between Cape Virgin on the N. and Cape Espiritu Santo, a projection of Queen Catherine's Foreland on the S., and it enters the Pacific at Cape Pillar. Its extreme length is 365 m., while its width varies from 2½ m. to 17 m. The only harbour is that of Magalanes or Punta Arenas, on Brunswick Peninsula. The strait was discovered by Magellan (*q.v.*) in 1520, and was thoroughly explored in 1826-36.

**Magellan, FERDINAND** (c. 1480-1521). A Portuguese navigator, whose real name was Fernão de Magalhães. In youth he was attached to the court, and in 1504 went to India with d'Almeida, the first viceroy. After expeditions to Malacca, Java, and the Spice Islands, he returned to Portugal in 1512 and served in a campaign in Morocco in which he was lamed for life. Discontented with his treatment by the king of Portugal, he entered the Spanish service in 1517, and two years later embarked with a fleet of five vessels



Ferdinand Magellan, Portuguese seaman

on a voyage to find a western route to the Spice Islands. Patagonia was sighted, and on Oct. 21, 1520, Magellan discovered the strait which bears his name.

The first to enter the Pacific, which he so named from the calm weather he encountered, he reached the Ladrões (otherwise the Marianne Is.), March 6, 1521, after his men had suffered terribly from scarcity and scurvy. He proceeded to visit the Philippine Islands, but in a fray with the natives of Mactán his party, attempting to convert the natives to Christianity, was beaten and Magellan was killed, April 27. After his death his fleet doubled the Cape of Good Hope and one vessel returned to Seville, having thus completed the first voyage round the world. *Consult* The First Voyage Round the World by Magellan, A. Pigafetta, Eng. trans., 1874; Life, F. H. H. Guillemard, 1890; Ferdinand Magellan, E. F. Benson, 1929.

**Magellanic Clouds.** In astronomy, name given to two cloud-like oval masses of thickly clustered stars and nebulae in the neighbourhood of the S. celestial pole. They are named after the navigator Magellan (*v.s.*) and resemble a portion of the Milky Way in appearance, though apparently unconnected with its structure. They are now known to be satellite galaxies of our Milky Way system. The large cloud is 14,000 light years across and 112,000 light years away; corresponding figures for the small cloud are 6,500 and 104,000.

**Magendie, François** (1783-1855), French physiologist. Born at Bordeaux, Oct. 6, 1783, he became professor of pathology in the Collège de France, 1830. An excellent experimenter, he demonstrated the motor functions of the anterior and the sensory functions of the posterior spinal roots. He also investigated the mechanism of deglutition and vomiting, and introduced into medical practice bromine, iodine compounds, strychnine, and morphine. In 1821 he founded the *Journal de Physiologie Expérimentale*. He died Oct. 8, 1855. A study of Magendie by J. M. D. Olmsted appeared in 1944.

**Magenta.** Town of Italy. In the prov. of Milan, it stands on the Ticino, 16 m. W. of Milan, with which it is connected by rly. It has some small manufactures, including silks, and gives its name to a colour discovered about the time of the battle (*v.s.*), and thence to the aniline dye more correctly known as fuchsine (*q.v.*).

**Magenta, BATTLE OF.** Fought June 4, 1859, between the Sardinians and the French on one side and the Austrians on the other. As soon as war broke out in May, the Sardinian troops were in position north of Alessandria, waiting for their French allies coming from Genoa. At Montebello and Palestro they beat back attacks, and thereupon the Austrians took their stand behind the Ticino near Magenta. By this time the French had come up and some of them crossed the river, and for a time the battle raged without definite result. The decisive move was made by Macmahon, who, without waiting for the consent of Napoleon III, crossed the Ticino higher up and appeared on the right flank of the Austrians. The latter fell back, and the battle ended almost without any move on the part of the Sardinians. The numbers engaged were about equal, 60,000 on each

side. Wauchope and some hundreds fell in a few minutes, and all was disorder. At dawn the guns got to work, while other battalions came up in support. The Boers were prevented from crossing a drift on the Modder by some cavalry and mounted infantry. The Gordon Highlanders made a fine attempt to get to the foe, and the Guards assisted in this movement, but it was impossible to secure a general advance. At nightfall the Boer guns began to play again, and Methuen withdrew his army to the Modder. The British lost nearly 1,000 men. The Boer losses were stated to be 70 killed and 250 wounded. *See* South African War.

**Maggiore.** Lake of N. Italy and S. Switzerland. The ancient Lacus Verbanus, it lies mainly between Piedmont and Lombardy. It is 38 m. in length, from  $\frac{1}{2}$  m. to  $5\frac{1}{2}$  m. in breadth; its maximum depth is 1,200 ft., and its area is 82 sq. m., while its surface alt. is 640 ft. Fed by the Maggia, the Tosa, or Toce, and the Ticino, which traverses it, its waters have a greenish hue at its upper end, while at the other extremity it is a deep azure. The N. arm, in the Swiss canton of Ticino, is called Lake Locarno.



Maggiore, North Italy. The lake seen from above Siresa, looking toward Isola Bella and the Alps

side; but the Austrians lost 10,000, including a number of prisoners; the French lost about 4,000.

**Magersfontein, BATTLE OF.** Fought between the British and the Boers, Dec. 11, 1899. A British force about 10,000 strong, under Lord Methuen, was advancing to the relief of Kimberley. It had fought three actions within a week, losing about 1,000 men, and had forced the crossing of the Modder. It was then reinforced by the Highland brigade.

In front was a semicircle of hills, but little appears to have been known about the Boers holding them. On Sunday afternoon, Dec. 10, in heavy rain, the force moved out to the attack. The main assault was entrusted to the four regiments of the Highland brigade under Wauchope. The brigade of Guards and a brigade of English infantry were behind.

After a rest the Highlanders, the Black Watch leading, renewed the advance. It was 1 a.m., and the men were moving in close order, when the Boers suddenly opened

and on its N. shore stands the picturesque town of Locarno (*q.v.*). Lofty mountains enclose the N. part, while to the S. the hills, covered with vineyards, slope gradually to the plain. Maggiore is noted for its beautiful scenery. Opposite Pallanza are the Borromean Isles (*q.v.*).

**Maggot.** Popular name for the larva of an insect, especially when white in colour and without legs. The term is not a scientific one, and has no definite limits of application. It is most commonly given to the larvae of flies, found in decaying animal and vegetable matter.

**Maghara.** Wadi N.W. of Jebel Serbal, near the W. Sinai coast of Egypt. A narrow valley between sandstone cliffs, its W. face is penetrated by galleries made by ancient Egyptian turquoise miners, who sculptured reliefs thereon, portraying their royal masters from the 1st dynasty down to Rameses II. From 1849 Macdonald attempted unsuccessfully to rework the mines. Petrie made a systematic examination of the remains in 1905.

**Magi.** Caste of learned priests in ancient Persia. An aboriginal Median tribe, they became predominant through their development of central Asian shamanism, practising exposure of the dead and next-of-kin marriage. The Rab-Mag of Jer. 39 was Nebuchadnezzar's chief magus; the contemporary Jerusalem sun-worship (Ezek. 8) attests their missionary activity, about 600 B.C., and the Behistun inscription mentions them. After their Aryan subjugation they acquired control of the Zoroastrian worship, contributing thereto its dualistic principle. They maintained their supremacy throughout the Sassanian empire, ultimately declining into unhonoured jugglers, whence the English word magic. The Magi of the Nativity story (Matt. 2) are popularly associated with much unhistoric tradition. See Three Kings: Simon Magus.

**Magic** (Gr. *magikē*, pertaining to the Magi). Form of attempting or pretending to control events by non-rational processes. It is based on a belief that man may secure the mastery of nature and the supernatural by means of appropriate rites, manual or oral.

The psychological attitude of primitive man towards his environment, seen and unseen, is a vague complex best described as magico-religious. Even in the lowest levels of culture all beliefs, with the practices and rites that give expression to them, are not necessarily magical. They sometimes recognize, more or less consciously, dependence upon rather than mastery of the unseen, and thereby stand upon the threshold of religion. If magic be defined as the power of the spell, and religion as submission to a higher power, the distinction between the two is that between spell and prayer.

When magic is countenanced by the community at large, its professed exponents are held in esteem so long as they are thought to be working for the general good. They may rise to social eminence, as in ancient Babylonia and Egypt, and from their superior capacity may attain the supreme power. Thus Dinka chiefs owe their position to their prestige as the tribal rain-makers; when this power fails, they may be deposed. But there often arises a suspicion, if not a certainty, that magical powers are being exercised for private ends, and this aspect of them leads to their being regarded as antisocial and condemned as illicit. Hence the distinction between white and black magic, the one beneficent, the other baleful.

It would seem that in the development of magical ritual act preceded word. The efficacy of the act is usually deemed to lie in the law of association. Hence the use of such terms as sympathetic, contagious, and imitative magic, as when an Australian blackfellow induces the death of an enemy by pointing a death-bone towards him, a Basuto youth acquires courage by eating a slain warrior's heart, or a seaman raises a wind by whistling. The magic of word or name—the spell or enchantment—rests on the notion that they partake of the substance of the person or thing denoted, a mode of thought especially rife among Semitic peoples.

In its beginnings magic was a genuine effort of the human mind to solve the riddle of luck. The magician should be conceived as exerting a power, not as practising an art. This mystic power of controlling the occult is conveniently called *mana*, a Polynesian word denoting the positive aspect of magic, its negative aspect being denoted by the more familiar Polynesian word *taboo*. When this potency is conferred upon inanimate objects they become fetishes, talismans, or mascots, and amulets or defensive charms.

In the workaday world there is a large realm of empirical practice which achieves results by rational processes, such as chipping a flint or weaving a mat. These acts, therefore, are not magical, and it is out of them, not out of the magical, that science emerged. Both magic and primitive religion are primarily concerned with the crises of life, and their ritual expression is intimately associated with the events of birth, reproduction, and decay. Hence the medicine-man merges into the witch-doctor when, to his crude pharmacy and surgery, he adds such magical mysteries as the pretended exorcism of a disease-demon, or the provision of a talisman to ensure childbearing. Magical rites may also be practised, either by the community, as in the Hopi snake-dance, or by the individual magician, for compelling rain, or increasing the fertility of cattle and crops. Much magic is defensive in purpose, as when one sorcerer seeks to counteract the malignant spells of another, or an amulet is worn to avert the evil eye. While divination resembles magic in employing non-rational processes, it differs from it in that its purpose in relation to the unknown is discovery, not control.

The tendency of advancing culture has always been to discredit,

and yet to fear, those magical arts which are practised by peoples on a lower cultural plane. The Malay is convinced that the jungle-dwelling Jakun possesses mysterious powers which cannot be aroused with impunity, and the peasantry in rural Britain still seek the aid of the gypsy in the greater crises of life. Magic dominated the emotional life of early Greece, and magical arts were attributed to Hecate and her offspring, Circe and Medea. The introduction of central Asian shamanism into Persia gave rise to the priestly caste of the Magi, who ultimately degenerated into mere jugglers. They bequeathed to Europe the word *magic* as denoting legerdemain and other forms of visual deception, still called conjuring.

At the beginning of our era magical arts came into conflict with Christian teaching, as recorded in the N.T. They comprised a farago of beliefs affected by neoplatonism and other philosophical speculations. Introduced into W. Europe through Byzantine and Saracenic channels, they developed new methods during the Middle Ages. Their mystic apparatus of wands, rings, mirrors, diagrams, symbols, and meaningless phrases were deemed by their exponents to be endowed with a potency which irresistibly ensured the attainment of their ends. See Obeah; Rain-making Customs; Voodoo; Witchcraft.

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**Magic Circle.** A society of British conjurers, professional and amateur. It was founded in 1905 by Neil Weaver, Herbert Collings, and Ernest Adams. See Conjuring.

**Magic Flute** *THE*. English title of *Die Zauberflöte*, an opera composed by Mozart, first produced under his direction in Vienna Sept. 30, 1791. Considered the greatest of Mozart's German operas, it was composed for his friend Schikaneder, manager of the Vienna theatre, who also wrote the libretto. A "fairy" opera it combines the spectacle of a pantomime with the solemnity of ritual music, and met with instant success. It was given in England, in the original German, at Covent Garden in 1833, the first production in English was at Drury Lane in 1838. Goethe began, but did not complete, a libretto for a sequel. *Das Labyrinth*, by Winter, is a sequel.

**Magic Square.** Arrangement of numbers in the form of a square, which is divided on a chess-board pattern, so that the sum of the numbers in every row, in every column, and in each diagonal is the same. A familiar and historical example is the magic square in Albrecht Dürer's en-

graving of Melancholy, which is illustrated. In this the sum of the numbers in every row, every column, and each diagonal is 34.

It will be observed that the numbers used in this magic square are consecutive, and run from 1 to 16. If the integers are consecutive from 1 to  $n^2$  the square is said to be of the  $n$ th order. In such an example the sum of the numbers in any row, column, or diagonal is equal to  $\frac{1}{2}n(n^2 + 1)$ . Some magic squares are of considerable antiquity, and, engraved on silver or other metal, were worn as amulets, as indeed they are in the East to this day. Emmanuel Moschopolus, who died in Italy about 1460, wrote a treatise on them, and investigated their mathematical theory, and the astrologers of his time, and afterwards, were much impressed by these arrangements, the squares of the orders 3, 4, 5, 6, 7, 8, and 9 being associated respectively with the seven astrological planets, Saturn, Jupiter, Mars, the Sun, Venus, Mercury, and the Moon. In 1705 De la Hire translated the essay of Moschopolus and collected the various known theorems on them, and gave rules for the construction of magic squares of higher order than the second.

**Magilp** or **MEGULP.** An oil medium used by artists. It gives a smooth paint which works easily under the brush. It appears to have originated in the 17th century, is said to have been used by Claude, and certainly was by Reynolds and Wilkie. The formula varied, but it consisted essentially of mastic varnish and linseed oil or linseed oil varnish. Magilp lacks permanence and, especially if a quick drying varnish is used, cracks badly, so that its use is now condemned.

**Magnin, WILLIAM** (1793-1842). Irish author. Born at Cork, July 10, 1793, he was educated at Trinity College, Dublin, and 1823 went to London to pursue a liter-

ary career, contributing to Blackwood's Magazine, and to Fraser's Magazine, which he assisted in founding, and in which his Homeric Ballads appeared. His remarkable series of Shakespeare Papers, which appeared in Blackwood's during 1837, aroused considerable discussion. He contracted habits of intemperance, fell into debt, and in 1842 was imprisoned in the Fleet. He was released by the offices of Sir Robert Peel, but his shattered constitution gave way soon afterwards, and he died at Walton-on-Thames, Aug. 21. Magnin possessed a strong vein of native wit, which even in his most wretched circumstances never failed him.

**Magninot Line.** A system of fortifications covering part of the frontier of France. The original defence system was begun in 1929, under the direction of Maginot, French war minister, and was completed in 1936. The fortifications extended from Montmédy to Belfort; but in 1936 it was decided to continue the line to the English Channel in the N. and to Grenoble in the S., increasing the length from 250 to 600 m. The defences on the Franco-Belgian frontier were still unfinished at the outbreak of the Second Great War, and W. of Montmédy consisted of little more than field fortifications.

Much of the Maginot line was underground, only barbed wire entanglements, tank obstacles, and some block-houses being visible. Ahead of the line itself were strongpoints intended to hold up an attacker and force him to disclose his real objective. The defenders would then fall back to the main defences through underground passages.

Minefields, tank traps, and obstacles, all covered by concealed weapons, guarded the approaches to the line. The defenders were protected against surprise by an elaborate warning

system. Big forts were nothing less than underground barracks, with living quarters, hospitals, air-conditioning apparatus, and transport systems which included electric lifts. Some passages extended 20 m. behind the line, so that the forts could be re-occupied and reinforced undisturbed by the enemy.

Heavy guns were mounted in turret casemates, which were surrounded by machine-guns to prevent enemy troops from placing demolition charges against the upper works. By the use of panoramic telescopes the guns could be controlled as in a battleship. The cables of the telephone system were buried five metres (16½ ft.) deep in concrete slabs, and the exchanges were 50 metres (164 ft.) underground. Throughout the line the shelters were constructed far away from the casemates; and the underground galleries could be divided into sections by armour-plated doors. The German counterpart to the Maginot Line was the Siegfried Line (*q.v.*). By their breakthrough N. of Montmédy, the Germans outflanked the line in May, 1940, and finally took it in reverse, though in places the defences held out until the surrender of France in June. There



Maginot Line. Map of the system of fortifications covering the eastern frontier of France. It was begun 1929, under the direction of the war minister Maginot, and completed 1936, and was 250 m. in length

is little doubt that this line gave the French military leaders a false sense of security and impaired the offensive spirit of the army. The lessons of the German campaign in Poland were ignored; and the Maginot outlook was at least partly responsible for disaster. See Fortification.

**Magister.** In classical Rome, the name of various officials, both public and private, religious and secular. The most important were: *magister equitum* (master of the horse), the commander of the cavalry under a dictator (*q.v.*), by whom he was appointed; *magister militum* (master of soldiery), the name given after the time of Constantine the Great to the imperial generals and legates; *magister officiorum* (master of offices), chief of the civil service; *magister memoriae*, who communicated imperial decisions to the people. The name was also given to the heads of guilds, corporations, and priestly colleges, to municipal officials, to persons chosen by the creditors of an insolvent debtor to act in their interests, to the captain of a ship, and to the master of the ceremonies at a banquet. Each country village (*vicus*) and district (*pagus*) also had its magister. During the regal period the administration of the city was in the hands of a *magister urbis*.

**Magistrate** (Lat. *magistratus*). Official of Roman origin, mainly concerned with administering the law. In ancient Rome the magistrates during the republican period were divided into ordinary and extraordinary. The former included the consuls, censors, praetors, aediles, quaestors, tribunes of the plebs; the latter the dictator, master of horse, military tribunes with consular power.

Further distinctions were patrician magistrates, appointed after the auspices had been taken; and plebeian, appointed without auspices. The dictatorship, consulship, praetorship, and censorship were higher (*maiores*), the aedileship, quaestorship, and tribunate of the people lower (*minores*), magistracies. Curule magistrates—consuls, censors, praetors, and curule aediles—had the right to sit in a curule chair and to wear the *toga praetexta*, a white toga with purple border. Those magistrates who possessed the *imperium*—which they exercised, though with certain limitations, as the successors and representatives of the old kings—but not those who only had *poteslas*, or executive powers limited to their sphere of office,

were accompanied by lictors bearing the fasces. The order of magisterial rank was dictator, consul, praetor, master of horse, censor, aedile, quaestor.

In modern usage the word magistrate is applied to a large number of people who are publicly vested with authority to administer the law. Justices of the peace are commonly called magistrates, and the head of a republic, *e.g.* the U.S.A., is known as the chief magistrate.

Justices of the peace in England are chiefly unpaid magistrates appointed by the crown on the advice of the lord chancellor, and are divided into two great classes, county magistrates and borough magistrates. The former and older class were at first virtually police officers, and it was not till 1856 that the county magistrates were stripped of their character of police officials, and made purely judicial. Borough justices were first appointed in the reign of Charles I, and by the Municipal Corporations Act, 1835, they were to consist of the mayor, the recorder, and such other persons as the crown might appoint by commission. The mayor and ex-mayor are ex-officio borough magistrates. Paid magistrates are known as stipendiary magistrates, and are appointed on the petition of the council of a municipal borough to the home secretary. A stipendiary magistrate must usually be a barrister of seven years' standing, and can act alone, whereas two unpaid justices at least must act. In London all the police magistrates are stipendiaries, and the lord mayor and any alderman, sitting at the Mansion House or Guildhall, have all the powers of a stipendiary. See Justice of the Peace; Lictor; Quaestor; Recorder; Stipendiary.

**Magma.** In geology, term given to the molten or potentially fluid material from which igneous rocks (lavas, etc.) are derived. Magma differs from lava in that it contains dissolved gases and other volatile constituents which escape from the fluid when it solidifies or when it comes to the earth's surface and the pressure due to the load of overlying rocks is absent.

Magnas vary widely in chemical composition. Rocks derived from them show even wider variations, because as cooling progresses the magmatic fluid changes in composition as different minerals crystallise in turn, or as country rock is assimilated into it. The conditions under which magnas consolidate control the degree of crystallisation of the rock pro-

duct. Slow cooling at depth promotes complete crystallisation of the constituent minerals. This drives out the volatiles, which in consequence permeate the surrounding country rock, altering or metamorphosing them, and in places forming ore deposits. See Igneous Rocks; Lava; Metamorphism; Plutonic Rocks; Volcano.

**Magmatic Segregations.** Type of mineral deposit. They are formed by concentrating processes operating within a molten rock magma before appreciable crystallisation has taken place. Important deposits have been formed in this way, but the numbers are small compared with those arising out of later hydro-thermal activity (see Hydrothermal Deposits). Typical magmatic segregations include certain magnetite, chromite, and sulphide ore bodies. The enormous mass of magnetite at Kiruna in Sweden forms an entire hill-ridge and is considered to represent a segregation of solid magnetite that has been remelted and squeezed out into adjoining rock to form a solid dyke of iron ore. The magnetite crystallised early and sank to the bottom of the magma chamber. Similar gravity concentrations of early chromite crystallisations are found in Norway and elsewhere. Sulphide segregations (*e.g.* at Sudbury, Ont.) are slightly different; here the concentration was effected by the separation of a heavy sulphide melt which became immiscible with the parent magma and sank to the bottom.

**Magna Carta** (Lat., great charter). A document sealed by King John of England in 1215, securing national liberties. The misgovernment of John (*q.v.*) had become intolerable, alike to the barons, the clergy, and the commons of England. He had over-riden or sought to override all law, and in Jan., 1215, the barons demanded the confirmation of the old charter issued by Henry I, a charter promising to observe "the good laws of Edward the Confessor." It became evident that John intended to resist by force—also that he had not force enough. The barons, largely guided by the archbishop, Stephen Langton, who officially conducted negotiations on the king's behalf, revised their terms in a more stringent sense; and the king found himself compelled to accept them and to set his seal to the Great Charter on June 15, at Runnymede, near Staines.

Except for the one section providing for the immediate control of



the government, the "palladium of English liberties" aimed not at all at the making of revolutionary changes. It stated what Langton and the barons took to be the recognized and fundamental principles for the governance of the realm in accordance with oldestablished law and custom; it required king and barons alike to bind themselves to observe those laws and customs; it claimed that

lent to the U.S.A. for exhibition at the New York fair in 1939, and was retained in America, because of the hazards of returning it under war conditions, until 1946. Magna Carta, W. S. McKechnie, 1905, remains the authoritative study.

**Magna Graecia** (Lat., great Greece). Collective name given to the ancient Greek colonies in the S. of Italy, the chief being Tarentum, Croton, Sybaris, Rhegium.

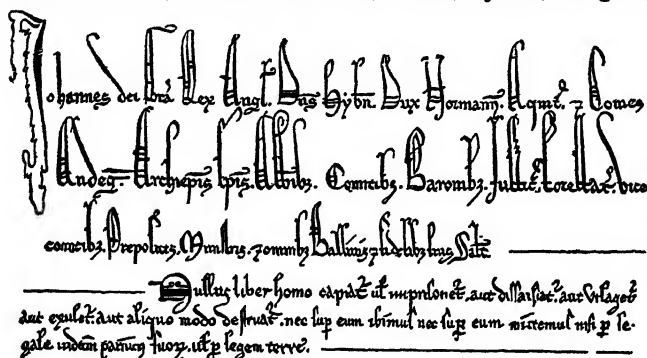
**Magnesia.** Oxide of magnesium,  $MgO$ . The name is also applied to the carbonate known commercially as *magnesia alba*. The oxide is produced when magnesium is burnt in air, but is usually prepared by heating magnesium carbonate. It is a white, light, amorphous powder used in the manufacture of firebricks, crucibles, etc., and in the manufacture of certain forms of limelight. It is also used in medicine as a laxative.

### Magnesian Limestone Series.

In geology, a group of limestones of Permian age (*q.v.*) in which magnesium carbonate is present in greater or less degree. The series occurs in G.B. as a well marked band running roughly N. and S. from Durham to Derbyshire, on the E. side of the Pennines. The rock, variable in quality, is quarried for building stone.

**Magnesite** (Lat. *Magnesia*, a place name). Mineral consisting of magnesium carbonate, constituting an important ore-mineral of magnesium. It may occur as rhombohedral crystals resembling calcite, or compact and amorphous, and varies in colour from white to yellow-brown. It is found in veins or irregular shaped masses in magnesium-rich rocks, such as serpentine or dolomite; also in hydrothermal veins. The most important known deposits are in the U.S.S.R., Austria, Manchuria, the U.S.A. A source of magnesium, magnesite is also used in making refractory bricks for special linings in certain metallurgical processes. Special plastic, quick-setting cements are made from prepared magnesite and magnesium chloride. Crude magnesite is the base for many magnesium salts, including Epsom salts. See *Magnesium*; *Magnesium Ores*.

**Magnesium** (Lat. *Magnesia*, a place name). Metallic element notable for its lightness. The metal was first isolated by Davy in 1808. Later Bussy and Bunsen obtained reasonable quantities by reduction of magnesium chloride with potassium, but for many years its only use as a metal was for photographic work, where the intense light emitted by the burning ribbon was, and still is to some extent, used for taking indoor photographs. From 1908 the Germans developed the magnesium-rich alloys, which since 1920 have taken a world-wide and important place in industry. The element, symbol Mg, falls in the second group of the Periodic Table, having two free valency electrons, as do beryllium, calcium, strontium,



**Magna Carta.** Facsimiles showing, top, three lines of the preamble and beneath them three of the 39th chapter, which guaranteed trial by jury

neither in the crown nor anywhere else did there lie any power or right to override them or to change them except with the common consent ; and it asserted the right of resistance in arms to such attempt to override or change them.

It laid down the principles that no man may be punished without fair trial; that punishment must be proportionate to the offence, and that justice may not be denied nor delayed, nor sold to any man. It affirmed, as generally recognized, certain feudal rights of lords over their vassals, and it claimed that demands beyond these might not be made without the sanction of the great council of the realm, duly summoned according to recognized form. This clause became the basis of the doctrine that the crown cannot impose additional taxation without the assent of parliament.

The British Museum possesses the original Articles of the Barons and two of the four surviving originals of the Magna Carta of 1215, the two others being at Lincoln and Salisbury. The Lacock abbey copy of Henry III's third reissue of Magna Carta, 1225, i.e. the final form as still in the statute book, was presented to the museum in 1945, and is an extremely beautiful document, with a nearly complete impression of the first great seal of Henry. The Lincoln copy of Magna Carta was

and Metapontum. The original colonies were mostly founded c.720-650 B.C., rose to great power and wealth, warred with each other and with the natives, and were decadent long before the Roman conquest in 271 B.C. *See* Greece.

**Magnesia.** Name of two ancient cities of Asia Minor. (1) *Magnesia ad Maeandrum*, a city of Ionia, situated at the confluence of the Lethaeus and Maeander, is said to have been founded by the Magnetes from Thessaly, destroyed by the Cimmerians (c. 725 B.C.), and rebuilt by the Milesians. It was specially famed for a temple of Artemis, of which there are considerable remains, and also of a theatre and gymnasium. (2) *Magnesia ad Sipylum* (mod. *Manissa*) was a city of Lydia, on the N.W. of Mt. Sipylus. Here Lucius Scipio Asiaticus defeated Antiochus the Great (190 B.C.) and put an end to the Seleucid kingdom of Syria. A few miles to the E. of the city is the so-called rock of Niobe (*q.v.*), which, however, probably represents Cybele, mother of the gods.

Magnesia was also the name of a peninsula and district on the E. of Thessaly. Magnesite is found in Euboea opposite here in great quantities, whence the English word magnet (lit., Magnesian stone). The word magnesia, its corruption manganese, and the derivatives magnesite, magnesium, magnetite are of similar origin.



barium, and radium. It has an atomic number of 12; atomic weight, 24.32; melting point, 651° C.; boiling point, 1,103° C.; specific gravity, 1.74; electrical conductivity, 37 (silver being 100); crystal form, close-packed hexagonal, with lattice constants  $a=3.2030$  and  $c=5.2002$  at 25° C.

#### Extraction Processes

Magnesium occurs in nature as the carbonate, magnesite  $MgCO_3$ , and as the double carbonate with calcium, dolomite  $MgCO_3 \cdot CaCO_3$ . Other less-used sources are carnallite  $KCl \cdot MgCl_2 \cdot 6 H_2O$ , Epsom salt  $MgSO_4 \cdot 7 H_2O$ , and the silicates, olivine and serpentine. An important source of magnesium, accounting for nearly a third of the world's output, is natural brines and sea water (containing one part of magnesium in 8,000 parts of water), where it occurs as the double chloride with potassium. There are two chief types of process for the extraction of the metal, although each has several variations. The older process involves the electrolysis of a bath of fused magnesium chloride or carnallite. In the U.S.A. magnesium hydroxide is precipitated from sea water by an emulsion of lime. After filtration, the hydroxide is converted back to the chloride by the action of chlorine, which is itself obtained as a by-product from the electrolysis process which follows. During electrolysis of the fused salt, chlorine is liberated at the anode, and molten magnesium at the cathode, where it floats to the surface and is periodically dipped out. The electrolyte, which must be kept heavier than the molten metal, is not pure magnesium chloride, which has a high melting point of 712° C. and a low electrical conductivity, but a mixture with other chlorides such as those of calcium and sodium.

Later processes are essentially thermal reductions, one group using carbon as the reducing agent and the other silicon. The carbon reduction process was developed at Radentheim in Austria, and was later carried out in the U.S.A. and Wales. A mixture of calcined magnesite and powdered coal or coke is fed continuously into an electric arc furnace. The resulting reaction produces gaseous magnesium and carbon monoxide, and the metal is chilled rapidly by fuel oil before it has time to reoxidise and form magnesium oxide. The oil prevents the fine magnesium powder from igniting spontaneously in the air and makes it safe to handle.

The silicon reduction process was devised by Pidgeon in the U.S.A. and involves the direct reduction of the magnesium present in dolomite by powdered ferro-silicon. The calcined dolomite is mixed with the ferro-silicon, pressed into pellets, and heated under vacuum at 1,200° C. in a retort. The magnesium is evolved as a vapour and crystallises in the cool end of the retort, leaving a residue of calcium silicate in the hot end. The commercial metal has a purity of at least 99.8 p.c., while that produced by the thermal reduction processes exceeds 99.98 p.c. magnesium.

Metal from the electrolytic process is often purified by remelting under a suitable flux, heating to 740° C., and adding up to one p.c. of manganese in some form or other. The melt is then allowed to cool about 70° C., when an iron-manganese complex solidifies and settles out, leaving a purer magnesium, which can be pumped off from the top. Anglo-American capacity to produce magnesium grew from 6,000 to 300,000 long tons per annum over a period of four years. Pure magnesium, which is a hard, white metal, is very stable in ordinary air, but is readily attacked by air containing salt spray. It is easily die-cast and can be rolled or extruded. An extruded rod would have an ultimate tensile strength of 12 tons per sq. in. and an elongation of 4 p.c.

#### Incendiaries and Signals

Magnesium alloys came into prominence during the Spanish civil war, when incendiary bombs dropped from German aircraft were of devastating effect. When the Second Great War started, magnesium production was increased for use in incendiaries, which absorbed more than half of the combined U.S.A.-British production, while magnesium continued to be used for flares, signals, flash bombs, and other applications where the vivid light from the powder was of value. At the same time the use of magnesium-rich alloys for engineering materials steadily increased.

Magnesium, which is only two-thirds of the weight of aluminium bulk for bulk, is not much used by itself as it is not very strong, not malleable at room temperatures, is brittle and easily corroded except by alkalis. But by alloying it with up to 12 p.c. of manganese, aluminium, and zinc in varying proportions, a series of alloys can be produced in cast or wrought form. These are much used for engine parts in aircraft and automo-

biles, particularly for heavy lorries, where their lightness and high strength are an asset. An alloy containing 8.5 p.c. aluminium, 3.5 p.c. zinc, and 0.5 p.c. manganese would have an ultimate tensile strength of 10 tons per sq. in. as cast, with an elongation between 2 and 8 p.c. and a Brinell hardness of 50 to 60; if this alloy is heat-treated by holding it at 370–450° C. for several hours, the tensile strength increases to 13 to 16 tons per sq. in. with an elongation of 6 to 14 p.c.

#### Other Magnesium Alloys

An alloy containing 0.2 p.c. aluminium, 0.2 p.c. zinc, 2.5 p.c. manganese, 0.2 p.c. copper, and 0.4 p.c. silicon, may be rolled into sheets, when it will have a tensile strength between 11 and 15 tons per sq. in. with an elongation of 4–10 p.c. Such a material might be used for fabrication of fuel tanks, as it could be readily welded by the argon-arc or a gas-welding process (see Welding). An alloy suitable for forging contains 11 p.c. aluminium, 2 p.c. zinc, 1 p.c. manganese, 0.4 p.c. copper, and 0.3 p.c. silicon, and has a tensile strength of 17–24 tons per sq. in. and an elongation of 5–12 p.c.

Molten magnesium burns unless protected by a flux of magnesium chloride, fluorspar, and magnesia. As it reacts violently to water, sand moulds are made containing a small amount of sulphur, which burns to form  $SO_2$  and so protects the magnesium. Various methods of protecting the alloys from corrosion have been devised, the most important being chromating, which involves treatment with alkali chromates or dichromates. The treated surface is a good base for varnishes or paints. Many aluminium alloys contain from 3–10 p.c. of magnesium. Magnesium wire is used for degassing radio valves, magnesium ribbon as an insulator in certain heating appliances. Magnesium is used as a deoxidiser in nickel alloys, copper, and brass. See Aircraft; Alloys; Aluminium; Metallurgy; Welding.

**Magnesium Ores.** Minerals worked for magnesium. These are numerous and occur in a variety of ways. Magnesite (*q.v.*), the carbonate, occurs in two commercial forms: as compact masses and veins in serpentine formed by the action of carbonated waters, *e.g.* in Greece; and as crystalline, or spathic, magnesite, in replacement ore-bodies in dolomite or limestone, resulting from the activity of ascending thermal solutions emanating from a deep igneous

source. There are large deposits of this type in the Urals, U.S.S.R.; Manchuria; Central Europe; the U.S.A.; and Canada. Dolomite (*q.v.*) is extensively used for refractory purposes, and most countries have abundant supplies.

Germany used to produce large quantities of magnesium metal from carnallite, magnesium chloride, occurring in the famous Stassfurt salt deposits (*q.v.*). Much of the American supply comes from magnesium chloride occurring in deep saline wells or is extracted from sea-water by a secret process. Brucite, hydrated magnesium oxide, is used in Canada and elsewhere, and is ideal for refractory and ceramic purposes.

Apart from the application of magnesias in special refractories and ceramics, magnesium and magnesium salts have numerous uses in paper manufacture, as a filler; in fertilisers; in glazes; in medicine (*e.g.* Epsom salt); as a source of carbon dioxide; in sugar refining, etc.

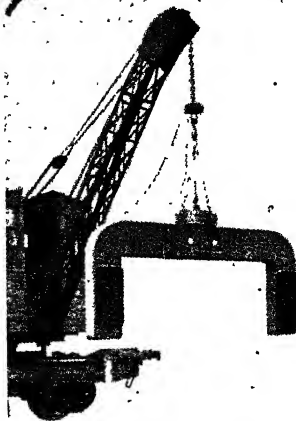
**Magnet** (Lat. *Magnesia*, a place name). A piece of a substance which, owing to a particular arrangement of the molecules of which it is composed, possesses or produces a field of magnetic force, which will attract or repel other magnets; attract iron, steel, and certain other substances; induce an E.M.F. in a conductor moving in its field; produce a mechanical force on a current-carrying conductor in its field; or, if suspended freely in space, align itself with the earth's magnetic field.

An electro-magnet consists of a straight, horse-shoe, or other shaped bar, magnetised by being surrounded with a coil carrying current, the magnetic flux or lines of force from the coil producing the particular condition of internal structure of the material which cause magnetic phenomena. A permanent magnet may be a natural one, such as lodestone, a widely distributed substance known from ancient times, or it may be a piece of hard steel or alloy which has been magnetised in one of various ways, *e.g.* by stroking with another permanent magnet or by surrounding it with a coil and temporarily converting it in to

an electro-magnet. While the soft iron, cast iron, or mild steel used for electro-magnet cores, however, retains very little magnetism when the exciting force is removed, the material of which a permanent magnet is made remains magnetic to a high degree.

Besides the hard carbon steel formerly in universal use, chromium steel and tungsten steel are used together with various alloys, of which the most spectacular in its results is one of iron, aluminium, nickel, cobalt, and copper, which has, weight for weight, more than 20 times the magnetic energy of carbon steel. These alloys are brittle, and so hard that grinding is the only possible method of machining.

The magnetising force required



Magnet. Crane, with magnet attached, hoisting a steel casting. Top, left, scrap iron handled by lifting magnet

by an electro-magnet to produce a certain intensity of magnetic field can be calculated from the consideration of the length of the magnetic path, and the characteristics of the material used; it is expressed in ampere-turns, the product of current and number of turns of wire in the coil. One ampere flowing through 1,000 turns will produce the same magnetising force as 20 amps. flowing through 50 turns, etc.

Magnets as used in dynamos, etc., are described under Electro-magnetic Machines. The lifting magnet used on cranes is like an in-

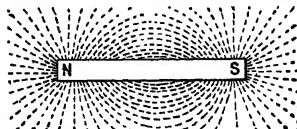
verted shallow dish with a central stalk on which is mounted the exciting coil, the poles being the stalk itself and the rim of the pot. A brass or other non-magnetic cover plate is fitted to exclude moisture and foreign matter (*see illus.*). Electro-magnets are used to operate switchgear, relays, and similar applications. A polarised magnet is an electro-magnet with a permanent-magnet core, so that the current in the coil tends to strengthen or weaken the normal field of the magnet, according to which way the current passes through the coil.

Another type of electro-magnet, the solenoid, has, instead of a fixed core, a short pole piece and a movable core free to slide in and out. When current is passed through the coil, the moving core is attracted inside the coil, the movement being utilised for various mechanisms where a very strong pull is required, *e.g.* 10,000 lb. at the end of a 2 in. movement.

**Magnetic Declination** or **MAGNETIC VARIATION**. Angle between the geographic and the magnetic meridians at any place. Only at places on the so-called agonic lines do compass needles point due N. and S. Elsewhere they point either E. of N., as over most of the Americas and Asia, or W. of N., as over most of the Atlantic and Indian Oceans, Europe, and Africa. The magnetic declination changes from year to year. At Greenwich it was easterly before 1660. In 1819 it was 24° 25' W.; in 1925 13° 10' W. In 1945 it was 10° W. at Abinger in Surrey, where observations of earth magnetism were made after 1925. Magnetic deviation is an error of the compass.

**Magnetic Equator**. Imaginary line passing round the earth close to the equator on which a magnetic needle shows no dip. The general inclination of the magnetic to the terrestrial equator is about 12°.

**Magnetic Field**. In magnetism, the name given to the sphere of influence of a magnet; *i.e.* where



Magnetic Field. Diagram showing the lines of force round the N. and S. poles of a bar magnet

its effect can be detected. *See* Magnetism.

**Magnetic Meridian**. Direction registered by the needle of a magnetic compass at any given point on the earth's surface.

**Magnetic Mine.** Sea mine used by the Germans in the Second Great War. A weapon from which the Germans expected much, the first magnetic mines were dropped by German aircraft near Shoe-burness on Nov. 2, 1939. They damaged much shipping before "degaussing" (*q.v.*) was perfected. Mines were fitted with a magnetic device that, actuated by a ship's hull, set off the detonator. *See* Mine.

**Magnetic Poles.** Name given to the two positions on the earth's surface to which the isogonic (equal declination) lines appear to trend or where terrestrial magnetism appears to be at a maximum. In their neighbourhood the dip needle is vertical, the horizontal component of magnetic force vanishes, and the magnetic compass ceases to take a fixed position.

In 1947 the N. magnetic pole's position was near Prince of Wales I. and Somerset I., N.W. of Boothia Pen., Canada. The S. magnetic pole is 155° 6' E. and 72° 25' S. in the Australian Antarctic dependency, S. of King George V Land. These poles are not points, but extensive areas. The N. and S. poles of a magnet are at its ends. *See* Magnetism; Pole.

**Magnetic Standard.** Term used in electrical engineering. The Hibbert secondary standard of magnetic flux for laboratory use consists of a permanent magnet and soft iron yoke of concentric form designed for permanence of magnetism. The yoke contains an annular gap at the top of one pole of the magnet, through which may be slipped a single layer coil mounted on a thin brass tube, so that the turns cut the magnetic flux and discharge a current through a search coil and ballistic galvanometer connected to it.

**Magnetism.** Science of magnets and magnetic forces. In a straight bar magnet the magnetic power of attraction is concentrated near the two ends, known as poles, and the centre of the magnet possesses no such power. Similarly, in a magnet bent into horse-shoe shape, where the two poles are close together, the curved part has only insignificant attractive power. If a bar magnet is broken in two, each part is a magnet with two poles. The properties of the magnetic poles can be further investigated by magnetising a light steel strip and suspending it on a pivot so that it can turn about its centre in a horizontal plane. It will point approximately N. and S., and is, in fact, a crude form of the mariner's compass.

If, now, two such needles are placed close together, it will be found that the two N. poles repel each other, and that the two S. poles likewise repel each other, but that the N. pole of either magnet attracts the S. pole of the other: *i.e.*, like poles repel, unlike poles attract. The interposition of a screen of wood, paper, etc., has no appreciable effect on the magnetic force.

If a magnet is dipped into iron filings, they will cling in masses round the poles. Further investigation shows that each tiny piece of iron has become a magnet, and that all the S. poles of the filings are turned towards the N. pole of the magnet and vice versa. A careful study of the iron filings clustering round the poles of a magnet shows that they arrange themselves in definite patterns when proper precautions are taken. If a sheet of stiff paper is laid over a magnet and covered with a uniform coat of iron filings, the filings are seen to arrange themselves in well-marked curved lines, which spread out from the poles in all directions (*see* Magnetic Field *illus.*). These are the lines of force, which show the direction of the magnetic force at any point.

#### The Magnetic Meridian

The direction in which a freely suspended horizontal magnetic needle points at any place on the earth's surface is called the magnetic meridian at that place. The compass does not point to the true N., but to what is called the magnetic N., and there is thus nearly always an angle, the declination angle, between the magnetic and geographical meridians at any place.

A compass needle suspended about a horizontal axis through its centre so that it is free to move in a vertical plane, and placed in the plane of the magnetic meridian, dips its N. pole at an angle to the horizontal which is called the angle of dip. This angle varies from place to place and from time to time. Its value at London in 1843 was 69°, in 1947 was 66° 45'.

The leading facts as to the mutual action of magnets and their behaviour under the influence of the earth's magnetism were known to William Gilbert (1540–1603); a great advance was made in the 19th cent. in the discoveries of the connexion between electricity and magnetism.

The atomic theory of magnetism is involved; but the enhanced magnetism of ferromagnetics can be accounted for by their particular atomic structure. The idea put

forward by Schuster in 1891 that every large rotating mass is a magnet was revived by Blackett who, from observations of the magnetic fields of the earth, the sun, and a star 78 Virginis, showed that the following relation between electro-magnetic and gravitational phenomena appears to be true:

$$M = \frac{\beta G \pm U}{c}$$

Where  $M$  is the magnetic moment of the rotating body,  $U$  is its angular momentum,  $G$  is the gravitational constant,  $c$  is the velocity of light, and  $\beta$  is a constant of the order of unity. *See* Dynamo; Electricity; Galvanometer; Magnet; *consult also* Papers on Electrostatics and Magnetism, W. Thompson (Lord Kelvin), 1872; Magnetic Induction in Iron and other Metals, J. A. Ewing, 1900; Electricity and Magnetism, S. G. Starling, 1924; Magnetism and Atomic Structure, E. C. Stoner, 1926; Applied Magnetism, E. C. Stoner and T. F. Wall, 1926.

**TERRESTRIAL MAGNETISM.** The discovery that the earth had a field with the directive property of a magnet is veiled in the mists of antiquity. The earliest reliable evidence dates from the 11th cent. A.D. and is credited to the Chinese encyclopedist Shou-Kua: "Fortune tellers rub the point of a needle with the stone of the magnet in order to make it properly indicate the south." The use of this property, in the form of the mariner's compass, appears to have been first made in W. Europe c. 1187. It has now been reasonably established that an easterly declination had been observed in N.W. Europe some years before Columbus's voyage to the W. Indies. Another century was to elapse before the character of the earth's magnetic field began to be appreciated. From experiments on the distribution of the direction of the magnetic force over the surface of a spherical piece of lodestone, William Gilbert of Colchester concluded that the earth itself acts like a magnet, and also that the magnetic influence proceeded from within, a hypothesis in direct contradiction to that of his contemporaries who maintained that compass needles were directed by the pole star. Later, Faraday introduced the conception of lines of force. It remained for Gauss to determine, early in the 19th cent., the type of field that most closely agrees with the actual one of the earth and to show how it could be expressed in mathematical terms.

The earth has been described as a huge but comparatively feeble magnet, the field of which extends far out into space and whose intensity weakens in proportion to the cube of the distance from the centre of the earth, *i.e.* it decreases by about 8 p.c. for every 100 m. Thus the magnetic field 4,000 m. overhead is still one-eighth as intense as that near the surface. Direct verification has yet to be made, but certain observations on the reception of radio waves reflected from the upper atmosphere bear out this theory.

As the earth's outer shell is not homogeneous, its magnetic behaviour is far from uniform; the distribution of magnetic forces near its surface may be regarded as consisting of the regular field, due to a uniformly magnetised sphere, with an irregular one superimposed upon it. The N. and S. magnetic poles are roughly 1,000 m. from the respective geographic ones (see Magnetic Poles). It follows that the magnetic axis is inclined at some  $10^\circ$  or  $12^\circ$  to the axis of rotation and, as the magnetic poles are not diametrically opposite each other, the straight line joining them passes about 750 m. distant from the geographic centre of the earth.

The magnetic field may therefore be pictured as innumerable lines of force parallel to the surface near the equator, bending and converging at the magnetic poles, where a freely suspended magnetic needle would point vertically because the horizontal component possesses zero value. The vertical component is usually denoted by *Z*; the horizontal by *H*; the declination, or variation as sailors term it, by *D*; the dip, or angle which the needle makes with the horizontal, by *I*; and the resultant total force by *F*. If the field were entirely regular over the surface of the earth equal values of these elements, excepting *D*, would be found around any circle of magnetic latitude. Irregularities, however, in some parts of the world greatly affect one or other component: *e.g.* in regions where

deposits of magnetic ores occur close to the surface, the field is often so disturbed as to produce minor local poles.

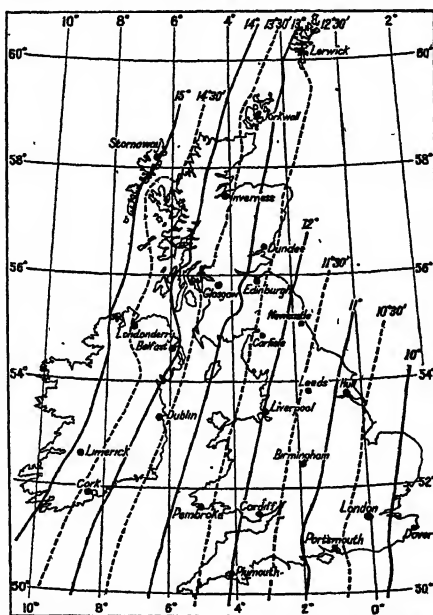
Portable instruments for the accurate measurements of declination and of the horizontal and vertical forces have been used in prospecting for minerals and oil. The results of these special surveys, carried out both at the surface and in mines, are normally interpreted in conjunction with other geological and geophysical

and the seven, totalling more than 250,000 miles of the Carnegie (U.S.A.), 1909-29. An aerial survey of the north polar regions by H.M. aircraft Aries, made shortly after the Second Great War, included the charting of magnetic elements.

Besides short period fluctuations in magnetic intensity, the earth's field undergoes changes which, though not necessarily at a constant rate, are continued gradually over very long intervals of time. This secular variation was described by Gellibrand, in 1634, as existing in the declination at London. In 1580 a compass needle there would have pointed to a position  $11^\circ$  E. of true N.; in 1660, almost exactly N.; in 1750,  $17^\circ$  W., in 1800,  $24^\circ$  W., in 1920,  $14^\circ$  W., in 1940  $10^\circ$  W. of N. Although the oval-shaped curve plotted from these points suggests a cyclic variation with a period of about 480 years, data from other stations indicate rather different periods; there is thus no certainty that the earth as a whole has any dominant true period; and though the positions of the magnetic poles are known to be subject to steady change, no generalisation can be made of their movement relative to the geographic poles. Secular changes of dip were noted also during the 17th cent. In the case of intensity, absolute measurements of which date from 1826, the long-period changes vary in different regions of the world, but the collective evidence is suggestive of a gradual decrease.

Various theories have been advanced to account for the earth's magnetism; these include the existence of a permanently magnetized core, a system of electric currents flowing within the earth around the axis, and magnetisation as a consequence of the earth's rotation. But the cause of the main field and its secular variation is so far unexplained.

The magnetic field at any place on the earth also shows a marked solar diurnal variation, which has a maximum range in summer and a minimum in winter, and a much smaller variation depending on lunar time; and the character of the traces may be quiet or disturbed. Large irregular disturbances or fluctuations (magnetic storms) tend to mask the regular quiet day changes. Magnetic storms may last for a few hrs. or several days and often begin abruptly. A magnetic disturbance recorded at Kew observatory on Sept. 1, 1859, is historic, for ou



Magnetism. Map showing isogonic, or lines of equal (westerly) magnetic declination, for the British Isles, 1942

information and up-to-date magnetic charts consisting of isomagnetic lines drawn through places possessing the same value for a particular element.

Lines of equal declination, or isogonics, are especially useful to those at sea, as such world-wide maps make it possible to interpret the compass direction at any point with fair accuracy.

The earth's magnetism is constantly changing and in order to supplement the measurements made at the relatively few magnetic observatories, series of surveys are made from time to time over closer networks of sites. Expeditions have probed into the uncivilized and unpeopled areas of the globe. Since the first magnetic survey at sea in 1700, world-wide cruises have been regularly undertaken, notable being the two of the Challenger (U.K.), 1872-76.

that occasion the solar observer Carrington noted that a bright eruption suddenly appeared on the sun's disk at approx. the same time as a disturbance on the magnetic records. The interpretation of that observation created much controversy, but it is now known that it was due to an outburst of ultra-violet radiation from the eruption area, with its almost instantaneous effect on the earth's field. Most magnetic disturbances occur some time after the solar phenomena. Disturbances are most frequent near the times of the equinox and in years of sunspot maximum; there is a tendency for recurrence at intervals of about 27 days. Magnetic storms are associated with prominent and widespread displays of aurora, the effect being most striking in the polar regions; they also produce a fading out of radio and, by causing large earth currents, interfere with telegraphic communication. Normal daily variations are primarily due to the existence of electric currents in the upper atmosphere which become very intense near the zones of maximum auroral activity during disturbances. One theory which explains the great increase in the ionisation of the upper conducting layers as being due to the emanation of radiations from the sun, is supported by studies of radio-wave propagation. See Compass; Electricity, Atmospheric; consult also The Earth's Magnetism, S. Chapman, 1936; Terrestrial Magnetism and Electricity, ed. by J. A. Fleming, 1939; Geomagnetism, S. Chapman and J. Bartels, 1940.

**Magnetite.** An ore-mineral of iron, iron oxide ( $\text{Fe}_3\text{O}_4$ ), containing up to 72 p.c. of that metal. It often contains small amounts of manganese, titanium, vanadium and nickel, aluminium and chromium. A member of the spinel group, it usually occurs as hard black grains or octahedral crystals. Magnetite is strongly attracted by a magnet and occasionally shows polarity (var. lodestone).

Magnetite is one of the most abundant and widespread of oxides; found as an accessory mineral in many igneous and metamorphic rocks; in meteorites; as a product of fumarolic activity; in sulphide vein deposits formed at high temp.; and as a residual mineral in alluvial deposits. The large magnetite ore-body at Kiruna, Sweden, is considered to have been formed as a segregation from a magma, whereas the Hungarian deposits were formed by contact

metamorphism during igneous activity. There are commercial deposits in Mexico, S. Africa, India, and elsewhere. The U.S.A. possess many large bodies of magnetite ore mainly formed in connexion with magmatic processes.

Magnetite is produced synthetically, as a preliminary to the manufacture of blister copper in the converter. The converter is charged with a low grade ore, which is made into magnetite by blowing. This forms an excellent refractory protective layer in the converter, so increasing its life. See Copper; Iron Ores.

**Magneto.** Electromagnetic machine for producing high-voltage sparks for petrol engine ignition. It consists of a small permanent-magnet dynamo with two windings on the armature—the primary with a small number of turns of comparatively thick wire, and the secondary with a large number of turns of thin wire. Each has one end earthed to the frame; the other end of the primary is taken to one side of the contact breaker; the other end of the secondary to a collector ring (see diagram).

As the armature rotates, the primary winding has an E.M.F.

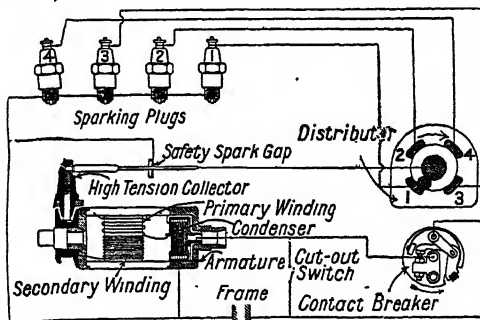
rotates with the armature, one point being mounted on a rocker arm which, twice per rev., strikes a stationary cam, thus opening the points suddenly. The exact instant at which the opening occurs can be advanced or retarded slightly by altering the angular position of the cam.

A distributor, in the form of a rotating brush, is geared to the armature, connecting the collector ring to the various plugs so that they fire in the correct order.

A condenser is provided, connected across the contact-breaker points, to prevent excessive burning, and there is a safety-gap on the secondary circuit so that, if the magneto is disconnected from the plugs, the high voltage can discharge through this gap, instead of breaking down the insulation on the windings. The cut-out switch shown in the diagram, when closed, short-circuits the contact breaker, thus switching off the sparking, and stopping the engine.

Another inductor type of magneto has both sets of windings stationary, the necessary movement of the field flux being produced by the rotation of an irregularly-shaped soft iron rotor which alternately bridges and opens gaps in a magnetic circuit, thus flicking the flux from one path to another. causing it to cut the primary winding in the process, as if the winding were rotating in a stationary magnetic field.

For automobile work, the popularity of the magneto has declined in favour of the induction coil (q.v.), which is simpler, cheaper,



**Magneto.** Diagram showing the connections of a magneto for a 4-cylinder engine. See text  
By courtesy of Percival Marshall & Co.

induced in it (see Electromagnetic Machines) and, as it is normally short-circuited by the contact breaker points, a current flows in the primary winding. At the point of maximum intensity, the contacts open sharply, and the resulting kick, due to the collapse of the magnetic field caused by this current, induces an E.M.F. in the secondary coil which is high enough to jump the gap between the sparking plug points, and fire the charge in the cylinder.

The contact breaker consists of two points of tungsten or platinum alloy mounted on a plate which

and does not suffer from the disadvantage of giving a weak spark at low speeds (i.e. at starting).

**Magneto-electric Machine.** Machine for the generation of electricity by the rotation of a coil of wire in the field of a permanent magnet. See Dynamo.

**Magnetograph.** Instrument for obtaining continuous records of the variations of the earth's magnetic field. The pattern most widely used incorporates three magnets suspended delicately with their axes horizontal; the first lies along the magnetic meridian and indicates the declination, the

second is transverse to the meridian and responds to the fluctuations of the horizontal component of the magnetic force, and the third, which can turn about a horizontal axis perpendicular to the meridian, oscillates in sympathy with changes in the vertical component. Each of the magnets carries a small mirror which reflects a narrow beam of light from a fixed source on to a sheet of photographically sensitive paper wrapped round a drum rotating once in 24 hrs. Spots of light similarly reflected from stationary mirrors provide base-lines which make it possible to tabulate the traces. Other forms of the magnetograph have faster-turning drums; and an arrangement of prisms may be introduced into the optical system to return the recording light spot to the chart when the deflections would normally be too great to be registered. The separate magnetic instruments of the magnetograph are referred to as variometers.

**Magnetometer.** Instrument for obtaining determinations of the earth's magnetic field. The elements normally measured are declination, horizontal force, and dip or downward tilt of a freely suspended magnet. Other components can be calculated from these basic measurements which serve to calibrate the base-line values of the magnetograms, thus allowing the ordinates of the traces to be expressed absolutely.

**Magnetron.** An instrument used in wireless engineering. The magnetron is a special type of thermionic valve in which the flow of electron current from filament to anode is controlled by a magnetic field. During the rapid development of radar, or radio-location, between 1939 and 1945, probably the greatest technical achievements were the design and production of the magnetron valve, which made it possible to reduce radar emissions from a wavelength measuring several metres to one measured in centimetres. These centimetric emissions could be projected as beams, giving greater accuracy and range. See Radar.

**Magnificat** (Lat., it magnifies). First word of the Latin version, and so the title, of a canticle or hymn, My soul doth magnify the Lord, in the Book of Common Prayer. In the

Anglican church it is sung after the first lesson at evening prayer, in the R.C. church at Vespers; in the Eastern church at Lauds. It is the song sung by the Virgin Mary. S. Luke I, vv, 46-55. See Mary.

**Magnification.** Increase in apparent size. In optics, the magnification or magnifying power of a lens is the ratio between the apparent size of the image of an object and the apparent size of the object itself, seen without optical aid. It is equal to the ratio between the focal length of the objective and that of the eyepiece. It can therefore be increased indefinitely by using eyepieces of shorter and shorter focus. Though the image will thereby be magnified, however, it will become fainter and will not gain in detail.

**Magnitogorsk.** City of the R.S.F.S.R. Founded by Lenin, it is situated on the Ural river in the Ural industrial area, and has rly. connexion with Ufa to the W., Chelyabinsk to the N.E., and Orsk to the S. It lies near deposits of iron, manganese, bauxite, and petroleum. One of the largest steel-producing centres in the U.S.S.R., its metallurgical plants were considerably expanded during the Second Great War. Pop. (1939) 145,870.

**Magnitude.** In astronomy, magnitude signifies the brightness of a star or other celestial object. A star is said to be of the first, second, third, etc., magnitude, according to whether it is in the brightest, second brightest, etc., class. Sixth-magnitude stars can just be seen with the naked eye; they are 100 times fainter than stars of the first magnitude.

In geometry magnitude is used in the sense of dimensions, as length, area, volume.

**Magnolia.** Genus of trees and shrubs of the family Magnoliaceae. They are hardy and half-hardy flowering trees and shrubs of great beauty, some being natives of sub-tropical regions of Asia. Other species are found in the U.S.A., whence they were introduced to the U.K. in 1688. Among the two dozen species are varieties

which range in height from 2 ft. to 80 ft. The large tulip-shaped flowers are of every shade from white, through pink, to purple, and there are also kinds with yellow flowers. The perfume is exquisite. The hardy kinds prefer a shady spot

in a deep, rich, loamy soil, but the half-hardy varieties require an admixture of sand and a sunny spot in the greenhouse. Magnolias are propagated either by seeds or layering. The evergreen sorts should be pruned in spring, summer leafing kinds after flowering.

**Magnus** (Lat. great). Masculine Christian name. It is chiefly popular in Scandinavia and is also found in those parts of Scotland in which the Scandinavians settled, e.g., the Orkneys. There is an Irish form Manus.

There have been seven kings of this name in Norway. Magnus III, king 1093-1103, married a Swedish princess, thus ending a war between those countries. He conquered the Hebrides, Orkneys, Isle of Man, and Anglesey, but was killed fighting in Ireland. He is known as Barfod or Barefoot. Magnus VI, who reigned 1263-80, is chiefly known for his laws, hence his name of the lawgiver. He restored the Hebrides to Scotland in return for an annual tribute. S. Magnus was a jarl, or earl, in the Orkneys, murdered in 1115. A number of churches are dedicated to him as S. Magnus the Martyr. See Norway.

**Magnus, HEINRICH GUSTAV** (1802-70). German chemist. He was born in Berlin, May 2, 1802, and in 1831 was appointed lecturer in technology and physics at the university. In chemical research proper he discovered the acid of platino-ammonium which bears his name. An incessant worker upon electrolysis and induction of currents, he threw light on questions connected with the polarisation of heat and the expansion and absorption of gases. He died in Berlin, April 5, 1870.

**Magnusson, ARNI** (1663-1730). Norse scholar and historian. He was born in Iceland and educated at Copenhagen. Having published a Latin work on Icelandic history, he became in 1701 professor of history and Danish antiquities at Copenhagen. He was then commissioned to study and collect the ancient manuscripts of his native land, and there spent ten years, 1702-12, making an invaluable collection. He published Testamentum Magni-Regis Norvegie 1719. In the great fire of Copenhagen in 1728 many of his collected manuscripts were destroyed, but the remainder he bequeathed, on his death two years later, to the university, having founded a scheme for their publication.

**Mago.** Name of several Carthaginian generals. The most cele-



Magnolia. Flower and leaves



brated was the youngest brother of Hannibal, who assisted in the conduct of the second Punic war in Italy, Spain, and finally in Cisalpine Gaul, where he was heavily defeated by the Roman general Varus and died of wounds, 203 B.C.

**Magog.** Town in the S. of Quebec, Canada. In Stanstead co., it is on Lake Memphremagog, and the river Magog, and is served by C.P.R. Factories make butter and cheese, textiles, jute products, and hardware. Pop. 9,034.

**Magpie** (from *Mag*, Margaret, and Lat. *pica*, magpie). Genus of birds belonging to the crow family.



Magpie. Common British species

The common magpie is a familiar resident of the British Isles. The plumage is velvet black, with green and blue reflections, with the exception of the scapulars and underparts, which are white. The tail is long and graduated, and the feet and beak are black. It was formerly very common in Great Britain, but its numbers have been much reduced by the persecution of gamekeepers; while in Ireland it was supposed to have been introduced by the English out of spite in the 17th century. An animated bird, it feeds mainly on worms, snails, and insects. Its nest is a large structure of sticks and mud, domed above, with a hole at the side for entrance. See Crow; Jay; Eggs, colour plate.

**Magwe.** Division, dist., and town of Burma. The division comprises the area of the Irawadi valley between the confluence of the Chindwin and the head of the delta. The dist. lies E. of the Irawadi, and is the best cultivated section of the division, although only a fifth of the total area is tilled. Oilseeds are a much more extensive crop than rice. Here also are oilfields, the installations in which were destroyed when the Japanese overran Burma in early 1942. The town is a centre for river traffic on the left bank of the Irawadi. It was recaptured by British and Punjabi troops, April 21, 1945. Div. area, 17,576 sq. m.; pop. 1,905,809. Dist. area, 3,313 sq. m.; pop. 499,000. Town pop. 7,500.

**Magyar.** Dominant people of Hungary. Returned in 1910 as 10,050,600, or one-half the population of the old Hungarian kingdom, they furnished at that time three-fourths of the professional classes. They form the bulk of the pop. of the present republic, and were estimated in 1941 at 8,657,172 or 92·8 p.c. They are descended from Altaian mounted nomads of Turkic stock and militant disposition, who subdued an Ugrian people, took Ugrian wives, and adopted their language. In their westward migration from the upper Kama and Ob valleys through the Bashkir dist. between the Volga and the Urals, they halted for a time in the steppelands N. of the Caucasus, where some Indo-European contact occurred. At the end of the 9th century they crossed the Carpathians from the N.E. under Bulgar pressure, and came to a final halt in the Dacian and Pannonian plains. Here they again intermarried with those elements in the local population, formed of Avar and other ethnic remnants, which did not retreat before them into the uplands.

Aided by their conversion to Latin Christianity in the 11th century, they have more and more assimilated western culture, and have preserved their national identity from Slav absorption by the vitality of their Ugrian speech

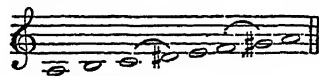


Magyar. Peasants wearing national costume

and their adhesion to the Roman communion. Their fondness for horses and flocks and their disinclination for agriculture are ancestral. They have become an urban people, muscular, broad-

shouldered, of medium stature and regular features. Two types occur, one narrow-faced and long-headed, the other broad-headed, yellowish, with brownish-black hair and wide cheek-bones, but no Mongolian strain. The isolated groups of Szeklers in Transylvania may represent the least modified ancestral type. Their speech is allied to Vogulish and Ostyakish, interpenetrated with Turkish and other kindred elements.

Magyar music is the national music of Hungary. It derives its most striking characteristics from Oriental and Gypsy sources. Amongst these features are (1) a scale with two augmented seconds:



(2) striking rhythms, including a rat-tat effect similar to the Scotch snap, and irregular bar-groupings:



(3) turns and embellishments of all kinds:



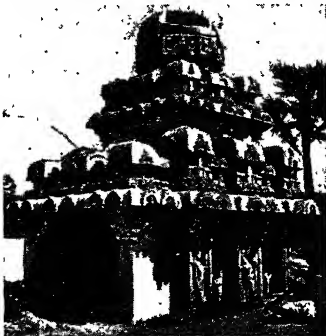
Much use of Magyar musical idioms has been made by Haydn, Schubert, Liszt, Brahms, Joachim, and other composers. The chief Magyar dance forms include the Czárdás, with slow and quick movements alternated; the Kör-táncz or society dance; and the Kanasztáncz, a dance of the peasantry. The Rákoczy March, as arranged by Berlioz in his setting of Faust, is the piece of music of Magyar origin which is best known in W. Europe. See Hungary.

**Mahábaleshwar.** Hill station of India, in Bombay state. It is 4,500 ft. above sea level among the Western Ghats, 70 m. S.E. of Bombay, and during the monsoon receives heavy rainfall. It is a resort during Sept.-Oct. at the close of the monsoon. It was established in 1828, and contains the handsome Frere Hall, built in 1864. The spot is regarded with great veneration by the Hindus, as it stands at the source of the sacred river Kistna (Krishna). Distant 9 m. is the hill fort of Pratapgad, stronghold of the founder of the Mahratta empire.

**Mahábalipuram.** Temple site of India, on the E. coast 30 m. S. of Madras. The name is a Sanskrit form of Mammalapuram (city of

the great wrestler). Other designations are Mavalaram and the Seven Pagodas. According to tradition, five of these reputed temples are beneath the waves; the two on the shore are Vishnu and Saiva shrines.

South are several raths (*q.v.*) and other ancient records of archaeological interest. The faces of two



Mahabalipuram, India. Monolithic rath or temple carved in granite  
Frith

huge boulders of granite, about 30 ft. high, have been magnificently carved in bas-relief for a total length of 90 ft., to represent Arjuna performing religious ceremonies. These monuments date from the 7th century, and were ordered by the Pallava kings, whose capital was at Conjeeveram. There are cave temples which today shelter Hindu pilgrims who bathe in the sea on a special sacred new moon day which occurs only once in 30 years. At most seasons the sacred spot is usually deserted, but can be reached from Madras by a day's sail southward on the Buckingham Canal.

**Mahabharata.** Ancient epic of India. In it are related with legendary accretion the events of a great war which took place in N. India in the 2nd millennium B.C. The mass of legends and poetry concerning that time are supposed to have been put together at some unknown date into a single narrative, which continued to grow, until the complete work, as printed at Calcutta in the 19th century, contains over 180,000 lines. The story, which occupies a quarter of the whole, tells broadly of the strife of the powers of good and evil as represented by the Pandus and the Kurus respectively. The title Mahabharata signifies the epic of the Great Bharata nation; it has been described as the Iliad of Ancient India. A condensation of it in English verse by R. C. Dutt was published in 1898.

**Mahaffy, SIR JOHN PENTLAND** (1839-1919). Irish scholar. Born in Switzerland, Feb. 26, 1839, he was educated there and at Trinity College, Dublin, of which he became fellow in 1864. He filled a succession of offices in the university, being professor of ancient history, 1869-1900, vice-provost in 1913, and provost from 1914. In 1864 he was ordained, and he was knighted in 1918. President of the Royal Irish Academy, a member of the Irish convention, he was known as the General, on account of his varied knowledge. He was a cricketer, a marksman, and a musician. His writings are chiefly on ancient history: *Social Life in Greece from Homer to Menander*, 1874; *History of Classical Greek Literature*, 1880; *The Empire of the Ptolemies*, 1895; *An Epoch of Irish History*, 1903. Mahaffy died April 30, 1919.

**Mahalla-el-Kubra.** Town of Egypt. Situated on the Nile delta, it is some 60 m. S.E. of Rosetta and 70 m. N. of Cairo, and the centre of an extensively irrigated and fertile cotton growing district. Pop. 63,292.

**Mahan, ALFRED THAYER** (1840-1914). American sailor and naval historian. He was born Sept. 27, 1840, at West Point, where his father was a professor in the military academy. He entered the naval academy and was engaged in blockade work during the American Civil War. In 1883 he published his first historical study, *The Gulf and Inland Waters*. That year the idea of his famous works on the influence of sea power came to him while commanding the warship *Wachusett* on the S. American coast. In 1886 he was appointed president of the U.S. naval war college. He retired from active service in 1896, but in the Spanish-American War of 1898 he was a member of the U.S. strategy board. Rear-admiral 1906, he died in Washington, Dec. 1, 1914.

Mahan published in 1890 *The Influence of Sea Power on History, 1660-1783*, which immediately made him famous, and followed this with *The Influence of Sea Power upon the French Revolution and Empire*, 1892. These were his greatest books, though in 1911 appeared his admirable *Naval Strategy*, containing lectures de-

livered at the war college. His books may be said to have profoundly influenced modern history and turned the eyes of the progressive states to the sea. They were translated into every language, and were nowhere more carefully studied and applied than in Germany. His general argument was that sea power exerted such overwhelming pressure that the belligerent who did not possess it was doomed to defeat. His brilliant biographical study, *Nelson the Embodiment of the Sea Power of Great Britain*, 2 vols., 1897, developed this view.

**Mahanadi** OR MAHANUDDY. River of India, in the N. Deccan. It rises in the Bastar hills in the Central Provinces, at the E. end of the Satpuras, flows E., and after receiving affluents from the highlands of Chota Nagpur turns S. at Sambalpur, and then S.E. to reach the Bay of Bengal by an extensive delta which is exceedingly fertile. The Brahmani and Baitarani join the delta, of which the head is at Cuttack. The upper course is deep cut in the hard rock, and the river is useless for irrigation; during the rains the flood waters rise rapidly and pour a great volume of water into the sea. Boat traffic stops at Sambalpur. At Cuttack a dam across the river holds back a head of water for the canals of Orissa. The river pierces the line of the E. Ghats by a forested gorge, 40 m. long. Length 529 m.

**Mahanandā.** River of West Bengal, India. It rises in the Darjeeling dist. on the Himalayan slopes, and flows generally S. through Purnea and Malda dist. to the Ganges, near the head of the delta. Subject to freshets in its upper course, it is almost empty in the dry season near its mouth, but is navigable under favourable conditions to Kaliaganj in Purnea dist.

**Mahar.** Indian menial caste. Numbering over 3,000,000, mostly in W. and Central India, they are descended from aboriginal elements in the pre-Aryan population of the Berar and Nagpur lowlands. Corresponding to the N. India Chamars, they retain primitive beliefs thinly veneered with Hinduism. They are scavengers, village watchmen, boundary guardians, and public messengers.

**Maharaja.** Indian title meaning great king. It is applied to certain powerful rajas and others of high rank. The high priests of the Vallabhacharis, a Hindu sect, call themselves maharajas. The feminine is maharani. See Raja.



Alfred T. Mahan,  
American sailor

**Mahatma** (Skt., great soul). In India, name applied to certain men of saintly lives who have proved their purity and courage by enduring severe tests. By theosophists, it is used in a more specific sense. According to them, man has a physical, an intellectual, and a spiritual nature, and a mahatma is one who has reached perfection, his spiritual nature controlling body and intellect. M. K. Gandhi (*q.v.*), by reason of his asceticism, moral and physical courage, and spiritual ascendancy, was called mahatma.

**Mahāvamsa** (Pali, great chronicle). Early chronicle of Ceylon, written in Pali, giving the history and traditions of the island before the 4th century A.D. It was based on a yet earlier work of the same name. An edition of the first 20 chapters was published in Ceylon in 1837 by Turnour (1799-1843); in 1844 this was issued as vol. I of the entire text and translation with an essay by Turnour on Pali Buddhistical literature, but was not completed. *Consult* ed. by W. Geiger, London, 1908.

**Mahāvīra** (fl. c. 500 B.C.). Title (Skt., great hero) given to a wandering ascetic of the Nigantha sect, named Nāta-putta, also entitled Vaddhamāna, an Indian religious leader. A contemporary of Gautama Buddha, he taught in Bihar, and reformed the Jain religion, especially developing its metaphysical side. He ranks as 24th of the Tirthankaras or "con-

system of Buddhism. Some scholars distinguish by the term Hinayana (little vehicle) the earlier system, which was agnostic, ascetic, and egoistic, seeking personal salvation through the attainment of nirvana in this present life. The Buddha's personal teaching suffered gradual change when, after his decease, it encountered other religious systems and propensities. The foundation of Mahayana is traditionally attributed to the philosopher Nagarjuna, about A.D. 200, who compiled a treatise embodying the teaching of the Madhyamaka school, that all is illusion. A rival school, the Yogachara, taught that nothing exists but consciousness.

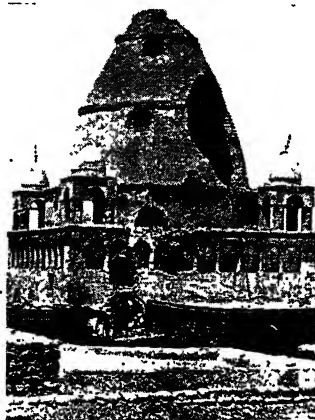
The ethical standpoint became broadened by the doctrine that nirvana is attainable less by self-concentration than by the altruistic practice of the six perfect virtues of a bodhisattva or future Buddha. These—compassion, morality, patience, energy, knowledge, contemplation—may be practised by

its immigrant peoples from central Asia. Although Brahmanism regained its hold upon Hindustan, Mahayana tenets led to Lamaism in Tibet, Foism in China, and Japanese Buddhism. Their imposing ritual and vigorous art, associated with spacious temples and images innumerable, made an irresistible appeal to vast populations to whom speculative mysticism offered no attraction. *See* Buddhism; Hinayana. *Consult* Outlines of Mahayana Buddhism, D. T. Suzuki, 1907.

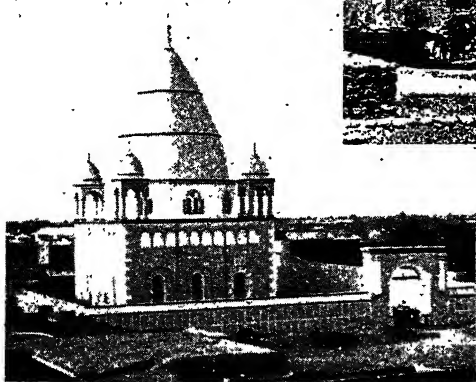
**Mahdi** (Arab., one who is guided in the right path). Name of the Messiah expected by the Mahomedans. The mahdi must be a descendant of the prophet; he must be proclaimed mahdi against his will at Mecca at a time when there is strife after the death of a caliph; and his advent shall coincide with that of Anti-Christ, after whom Jesus will descend in Syria and the reign of righteousness be inaugurated. This is the orthodox view, but in Persia and Asia Minor there have been many pretenders to the title from the time of the first generation after Mahomet. According to the Shiah sect, the mahdi has already appeared in the person of Mohammed Abu-el-Kasim, the 12th imam, who is concealed in some secret place until the end of the world. The most notable of recent mahdis, and the one to whom the name is most generally applied, is Mahomed Ahmed (1843-85). During 1880-84 he proclaimed a mission to free Egypt from foreign yoke, and acquired an ascendancy over the Sudanese tribes. Gordon, sent to withdraw the British garrisons, was besieged in Khartum by Mahomed, and killed. The latter died in the same year. His tomb was destroyed by Kitchener's men in 1898. Restored, it was reopened in 1947. *See* Egypt; Gordon.



Mahdi Mahomed Ahmed



Mahdi. The mahdi's tomb at Omdurman as restored and reopened in 1947. Top, right, the tomb after it had been wrecked by the British in 1898



querors of self" of the present age, i.e. saints who have raised themselves by their austerities to superhuman rank, and are objects of worship. *See* Jainism.

**Mahayana** (Skt., great vehicle). Term denoting the later doctrinal

householders no less than by celibate monks. A third characteristic, the path of devotion, led to the deification of past Buddhas and of exalted future Buddhas. This brought the primitive agnosticism into line with the aboriginal beliefs both of pre-Aryan India and of adjacent lands, with their reliance upon divine beings and orders of demons of lower rank.

To these compromises is due the eager acceptance of Mahayana for a time in N.W. India, especially by

householders no less than by celibate monks. A third characteristic, the path of devotion, led to the deification of past Buddhas and of exalted future Buddhas. This brought the primitive agnosticism into line with the aboriginal beliefs both of pre-Aryan India and of adjacent lands, with their reliance upon divine beings and orders of demons of lower rank.

**Mahé**. Principal island of the Seychelles group, in the Indian Ocean. With an area of 55½ sq. m., it is covered with high granite mountains. The capital is Victoria on the N.E. coast, with a good harbour. There are good roads, and direct telegraphic communication with Mauritius, Zanzibar, Aden, and Colombo. Products are coconuts, cinnamon, patchouli, and essential oils. Colonised by the

French, Mahé was captured by the British in 1794. See Seychelles.

**Mahé.** French harbour in the Malabar district, Madras. It is situated on the Malabar coast, 4 m. S. of Tellicherry. The French settled here in 1725, and it is administered as part of French India by the governor and council of Pondicherry. Pop. 14,092.

**Mahi.** River of India. With the Sabarmati, it drains the W. portion of the Malwa plateau into the N. end of the Gulf of Cambay. One headstream rises in the Mahi Hills in S. Rajputana, the other flows N. from the Vindhya range in Central India, and the joint stream flows through Gujarat in Bombay prov. The estuary has a bore at spring tides, and the low bed of the stream makes irrigation difficult.

**Mahikantha.** Name of a states agency of India under British rule, in the Gujarat div. of Bombay. The area, 3,124 sq. m. in extent, is

dice, and each player is dealt a hand of 13. The object is to collect, by drawing and discarding, a hand consisting of four groups of three tiles each, either all of the same denomination (e.g. three north winds, or three 6 circles), or a suit sequence (e.g., a 2, a 3, and a 4, bamboos); also a single pair. The first player to succeed declares Mah Jongg and exposes his hand. As this will contain 14 tiles, the draw must always precede the discard. Three of a kind may be converted into four, which quadruples its value, and an extra tile drawn immediately so that the required combinations can still be formed; but a sequence can be only three (or six, or nine).

Instead of drawing in his turn from the wall, a player may claim the discard of his previous opponent to complete a sequence by calling "chow"; or the discard of any opponent, whether in turn

influence on his composition had a lasting effect. In 1883 he began his career as opera conductor at Cassel, holding appointments at important European opera houses. He was chief conductor at the Metropolitan, New York, 1907-09, giving there the first American performances of *The Bartered Bride*, and *Pique Dame*. He died in Vienna, May 18, 1911.

Of Mahler's nine symphonies the best known are the 8th (choral) and the 9th. They trace descent from Beethoven through Bruckner, but are marked by looseness of structure and unusual harmony. In *The Song of the Earth* (six poems from Bethge's *Chinesische Flöte*) for voices and orchestra, 1908, he achieved perfection of delicacy. His *Kinder-tenorlieder* are notable for supreme beauty of phrasing. He was a late romantic who also tried to put philosophical notions into music. There are lives and appreciations by Adler, 1916; R. Mengelberg, 1923; R. Specht, 18th ed. 1925; consult also *Memories and Letters*, A. Mahler, Eng. trans., 1946.

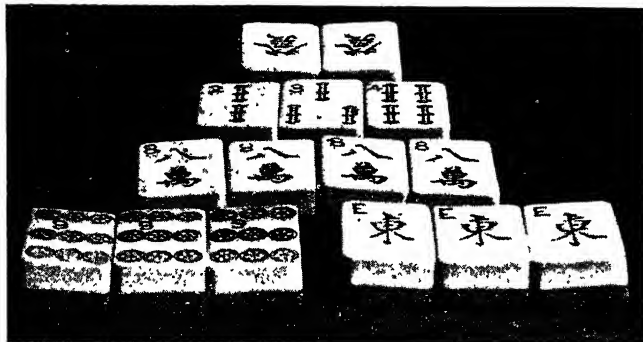
**Mahmud I** (1696-1754). Sultan of Turkey. He was the son of Mustapha II, and succeeded his uncle Ahmed III, who was deposed in 1730 by a revolt of the janissaries. He continued the war which Ahmed had waged with the Persians, and defeated several armies which Nadir Shah brought against him. He arranged a treaty with Nadir in 1736 for their mutual defence against Russia, which declared war on the alliance, and as a sequel he was forced to cede the Crimea. Successes on the Danube, however, permitted him to conclude an honourable peace at Belgrade in 1739. He died Dec. 13, 1754.

**Mahmud II** (1785-1839). Sultan of Turkey. Born at Constantinople, July 25, 1785, he was called

to the throne on the deposition of his brother Mustapha IV in 1808. He attempted to disband the corps of janissaries and undertook the reorganization of the army on



Gustav Mahler, Austrian composer



Mah Jongg. Typical hand of the winner of a round, made up of three groups of three of a kind (one converted to four), a suit sequence, and a pair

traversed by the river Sabarmati. Idar covered more than half the agency, the rest of the area being composed of very small states. All were merged in Bombay in 1948.

**Mah Jongg.** Ancient Chinese game for four players, popularised in England about 1924. It is played with 136 tiles, or pieces, four of each of the following 34 denominations: east, west, north, and south winds; green, red, and white dragons; numbers 1 to 9 each of three suits, generally known in England as bamboos, characters, and circles. There are eight super-numerary tiles called flowers and seasons, but as these do not affect the play, only the scoring, they are not normally used in China. The players are named after the four winds, the dealer on each round being E. and banker.

The tiles being arranged face downwards in the shape of a wall with four sides of 34 tiles each, the point of opening is determined by

or not, to complete three or four of a kind by calling "pung." As soon as his hand has been brought up to 14 tiles in any of these ways, it is his turn to discard again.

The round ends on a declaration of Mah Jongg or when the last 14 tiles of the wall are reached. The Mah Jongg hand is paid its full value by each opponent; other hands pay or receive their differences; E. always paying or receiving double. Scoring is complicated and somewhat capricious. Though there must be a large element of luck in drawing from the wall, a player may show judgement in calculating chances, and if the discards are played face downwards the game allows feats of concentration.

**Mahler, GUSTAV** (1860-1911). An Austrian composer. Born of Jewish parents at Kalischt, Bohemia, July 7, 1860, he studied at Vienna conservatoire, and in 1878 met Bruckner (q.v.), whose



Mahmud II, Sultan of Turkey

European lines. But the janissaries revolted. In 1809 he declared war against Russia, and in the campaign that followed he lost Bessarabia, Moldavia, and Wallachia. Then the Russian campaign of Napoleon in 1812 permitted him to conclude a favourable treaty with the tsar at Bukarest. He quelled a Serbian revolt in 1814, and suppressed the Greek rebellion of 1820-22, in which latter year he brought about a wholesale slaughter of the janissaries. His last years were overshadowed by the second revolt of the Greeks, the naval disaster of Navarino (1827), the Russian invasion of his territory in the same year, and the defection of Egypt under Mehemet Ali. Mahmud's ambitious schemes of reform were thwarted by the Egyptian war, and he was maintained only by Russian support in 1833. He died at Constantinople (Istanbul), July 1, 1839.

**Mahogany.** Term loosely applied by importers and cabinet-makers to the timber of various

wood is brownish-pink in colour, the red of new furniture being attained by staining. After many years in the manufactured state, it acquires a fine brown tint. It is much used for interior work in ships. In 1873 the tree was successfully introduced to India, Ceylon, and Mauritius. Among the spurious

mahoganies are *Ratonia apetalata* (bastard mahogany) of tropical America; *Khaya senegalensis* (African or Senegal m.) of W. Africa; *Soyimida febrifuga* (E. Indian m. or redwood) of S. India; and *Cedrela toona* (Indian m. and cedarwood), also of S. India. See Cabinet-making; Furniture.

## MAHOMEDAN ART & ARCHITECTURE

E. G. Harmer, Author, *The Story of Burmah*

*In this Encyclopedia there are also articles on other branches of art, e.g. Dutch, Gothic, etc. See Art; Arabian Architecture; Byzantine Architecture; Moors; also Istanbul, and other cities subject to Muslim influence; Alhambra; Arabesque; Mosque*

Mahomedan art is a term embracing the whole material outcome of the Islamic civilization. Unlike Buddhist art, which is always essentially religious, it is associated with every aspect of Muslim life. In each of the great regions which passed under Mahomedan domination local forms were utilised. But all bear the unifying impress due to the solidarity of Islam, upheld by the supreme obligation of the Mecca pilgrimage.

Mahomedan art, born in A.D. 622, the year of the Hejira, attended the triumphant progress of the Prophet and his companions, and from the outset manifested the tendencies which shaped its distinctive mould. Springing from the mutual impact of nomadism and sedentary conditions, its splendour and opulence were fostered by the pomp and luxury of caliph and ameer—made possible by the control of the sources of wealth—and by the spirit of emulation which sought to surpass the infidel civilizations around.

### Features of the Five Schools

The main schools of art resulting from the Islamic impulse are five: Syro-Egyptian, Moorish, Persian, Ottoman, and Indian. Each grew out of the soil, while drawing inspiration from the fountain-head. Each displayed close adherence to tradition and dependence upon trained craftsmanship rather than creative art. In W. Asia the Mesopotamian inheritance, with its vaulted brick edifices and mural faience, was interpenetrated by the Byzantine offspring of ancient Greece and Rome. In Egypt age-long traditions inherited in the Coptic crafts. In N. Africa the Romano-Berber tradition, in Spain the Romano-Iberian, still survived. Persia retained its Achaemenian memories, overlaid by Sassanian developments, and modified by central Asian and Chinese contact. Later on, Seljuk and Ottoman brought westward those new outbursts of nomadic energy before

which Byzantine degeneracy was destined to fall. In India similar impulses, Iranian and Turanian, introduced the great Muslim dynasties, whose alien ideals were engrafted upon the native zest for colour and floral ornament.

### Expression in Architecture

The decorative art of Islam, profoundly affected by the Koranic prohibition of images, rests ultimately upon its architectural achievement. The place of prayer set up by the Prophet when he reached Medina was an oblong brick enclosure open to the air, with a stone in the middle of the N. wall to mark the kibleh, or direction of worship, towards Jerusalem. In the 3rd year of the Hejira this was placed towards Mecca, the stone being transferred to the S. wall, and rows of palm branches along this wall sheltered the faithful at prayer. This primitive masjid, however, did not produce the mosque of later tradition, which emerged from the adaptation by the early caliphs of captured churches, notably at Jerusalem and Damascus. The Arab conquerors engrafted upon current architectural forms their own ritual needs, and by reconstructing or re-using Christian materials developed the mosque type. Thus arcaded aisles became liwans, pulpits became minbars, and forecourts became fountain-courts for ritual ablutions.

The history of mosque architecture is traceable from its beginnings in those of Amr and Ibn Tulun at Cairo, and those at Damascus, Kairwan, and Cordova, to the constructions of Kait Bey at Cairo, and the greater mosques of Ispahan, Samarkand, Konieh, Bursa, Istanbul, and Mogul India. The minaret, diverging from the Christian bell-tower by being used for vocal calls to prayer, passed out of the square plan, as at Aleppo and Rabat, to the cylindrical, such as the Kutb Minar at Delhi, and to composite designs.



Mahogany. Foliage and flowers of *Swietenia mahagoni*, Spanish variety

trees, but belonging properly to *Swietenia mahagoni*. This is distinguished as Spanish mahogany, a tall tree, member of the family Meliaceae, native of Central America and the W. Indies. It has a massive, buttressed trunk, glossy leaves divided into paired oval leaflets, and small reddish-yellow flowers in clusters.

The timber was introduced to Great Britain towards the middle of the 18th century, and became very popular for furniture, cabinet-making, etc., but in the reaction against all things Victorian it fell into temporary disfavour early in the 20th century. In nature the



Among the distinctive elements of Muslim architecture are the arching, which may be pointed, stilted and round, horseshoe, scalloped, or clover-leaved; slender shafting, suggestive of the ancestral tent-posts; open trelliswork, cupolas, and stalactitic pendants. Some of these elements were derived through Byzantine practice from Italian originals. They appear



Such are the incomparable Barkuk minbar at Cairo, the 13th century marble vase from Hamath at South Kensington, and the Jama mihrab at Fatehpur Sikri. Stone filigree work reached its zenith in India, as in the Sidi Sayyid mosque at Ahmadabad and upon the marble tomb-screen in the Taj. When secular buildings ignored the Koranic prohibition, as in the lion-fountain of the Alhambra, the result lacked the spontaneity of untrammelled sculpture. Where stone was lacking stucco lent itself readily to Muslim decoration, which reached remarkable levels

in the Alcazar and the Alhambra. Marble mosaic, borrowed from Byzantine craftsmen, was Muslimised in the same way. The inlay of pietra-dura at Agra and Delhi betrays Italian inspiration.

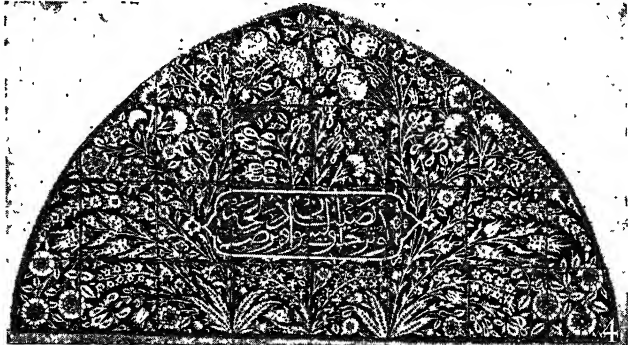
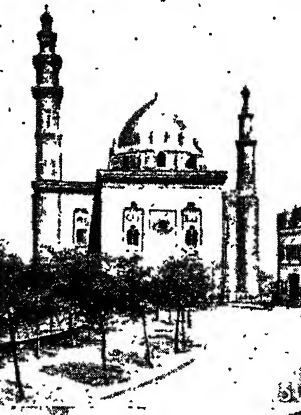
Effects of great distinction were created in wood panelling. Splendid examples are to be seen in Egypt. The Kait Bey minbar in the Victoria and Albert Museum is unsurpassed. Cairo was also the home of the turned lattice-work called meshrebiya. Wood was sometimes with ivory inlay.

The 12th century witnessed an astonishing outburst of decorative art as applied to metal. Mesopotamia still retained memories of ancient hammered work, and when the copper mines near the Tigris headwaters came to be exploited, the output was promptly utilised at Diarbekir and Mosul. Both here and in Persia methods of inlaying metal on metal, at first silver on bronze or iron, were skillfully practised. Damascus was especially addicted to gold inlay. Metal lent itself more readily than cloisonné enamel to arabesque. This metalwork became known in W. Europe through the returning Crusaders, especially in the domain of arms and armour. During the Renaissance, through the craftsmen attracted to Venice, Saracenic metalwork influenced the W. Simultaneous movements eastward led to such Indian developments as Biddery ware.

Nomadic art was at its best in the departments of weaving and leatherwork. The mural surfaces and pavements of permanent structures were replaced in nomadism by tent, curtain, and rug. Plain tapestry weaving, of Neolithic origin, became associated with knotwork in wool and silk. Central Asia produced plain fabrics

in buildings designed for secular as well as religious uses, such as madrasas or schools. Examples are the Alcazar and Giralda of Seville, Shah Jehan's palace at Delhi, the tombs of Timur at Samarkand and Sher Shah at Sahseram, and the Taj Mahal at Agra. Lofty portals, such as that of the Hasan mosque at Cairo, were developed in Persia and imitated in India, as in Akbar's triumphal gateway at Fatehpur Sikri.

The discouragement of images limited the freedom of sculpture in the round. Hence stone decoration relied mostly upon the treatment of flat surfaces with polygonal and arabesque design, or inscriptions of Koranic texts.



Mahomedan art exemplified in architecture and design. 1. Wooden pulpit, panelled and inlaid with ivory, Arabian, 15th century, Cairo. 2. Brass mosque lamp, c. 1468-96, Cairo. 3. Sultan Hasan Mosque, Cairo, built 1356-59. 4. Panel of tiles, from Senariyeh Mosque, Damascus, c. 1590

1 and 2 by courtesy of the Director, Victoria and Albert Museum



with geometrical motives as well as stylised animal and floral form. Knotwork enjoyed greater freedom of design, beautiful pictorial scenes of the chase and the garden being produced. The art became specifically Muslim when utilised for coverings of mosque floors. The individual "prayer-rug," with its mihrab-niche, is well known. Textile hangings on walls and posts were imitated in stucco, mosaic, and faïence.

The genetic relationship of Mahomedan pottery to weaving is best seen in the glazed tiles which—originating in ancient Persia, as in the famous Susa friezes—became another of Islam's contributions to mural decoration. They reached their zenith in the tiled walls of Istanbul, where they simulated silk carpet designs with remarkable fidelity. A variant of this art consisted in the use of cubical pieces of faïence for marquetry, rivalling marble mosaic in freedom and brilliance. Saracenic pottery was also important for ritual and domestic utensils, in part because the lustrous products of its kilns, dispersed from Spain through Majorca to Italy, gave to W. Christendom its medieval and Renaissance ceramic industries. Of equal interest are enamelled glass, notably Syrian mosque lamps, and carved rock-crystal vessels from Egypt. These forms of craftsmanship passed through Venice into the general stream of modern European art.

In the domain of painting, beautiful work was achieved in the illumination of copies of the Koran for the greater mosques, especially in Egypt. Emulous of Byzantine miniature painting, opulent effects were produced by blending gold, purple, and other brilliant hues in floral and interlaced patterns. The innate love of secular poetry and romance in Persia was conjoined with a regard for pictorial design, greatly accentuated by Chinese example. Hence arose a school of drawing and colouring of singular charm. Its influence penetrated to Mogul India, and resulted in those interesting works in landscape and portraiture which earned the encomiums of Reynolds, and rank among the choicest products of Islamic art. See *Alhambra*; *Arabesque*; *Arabian Architecture*; *Damascening*; *Mosque*.

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## MAHOMEDANISM, OR ISLAM

David Cowan, Lecturer, School of Oriental Studies, London Univ. *The beliefs and history of Islam, popularly but inaccurately known in the West as Mahomedanism, are here explained. For other great religions of the world, see Buddhism; Christianity; Hinduism, etc. The Prophet's own life is told under Mahomet*

Islam is the religion propounded by the Prophet Mahomet (c. 570–632), although Muslims do not consider that it began with him. In their view it is the natural religion of humanity and was preached by all the prophets sent by God at varying periods to lead mankind to the right path. But later generations, through either wickedness or ignorance, corrupted the message of Islam and so Mahomet was sent as the Seal of the Prophets to fix the faith in its definite form.

When Mahomet began to preach in Mecca (c. 610) that city, an important centre on the trade route between Syria and S. Arabia, was the focal point of a people steeped in idolatry and barbarism and contained an ancient temple in which were kept 365 gods. In the Arabian peninsula itself communities of Christians existed in the Yemen and on the borders of Persia, while settlements of Jews were to be found in various places, the most important group being in Yathrib, later known as Al-Medina. In the neighbouring country of Persia Zoroastrianism was the prevailing faith and Christianity was professed by the inhabitants of Syria, Egypt, and Ethiopia, so that, even before the Prophet's time, certain thinking men in Arabia were alive to their spiritual degradation. The story of the Prophet's own life is told under Mahomet.

### Place of the Koran

From the age of 40 until shortly before his death, the revelations which he received, since the Prophet could neither read nor write, were written down or learned by heart by his followers and collected during the caliphate of Othman to form the Koran or, more correctly, Qur'an, which is the religious book of the Muslims containing not only directions for their religious life but also regulations for their secular affairs. It is written in a language which has no peer in Arabic literature, simple yet powerful, and has exercised a far greater influence in the development of the Arabic language than any other writing.

The religion of Islam, which means submission to God and His Divine Will, is summarised in the

two short sentences by which a Muslim (one who submits to God) testifies to his faith, and which every new convert pronounces publicly: "I bear witness that there is no deity but God and that Mahomet is the Messenger of God." The principal idea in Islam is strict monotheism, and it is repeatedly stated in the Koran that the worst of sinners are those who associate, even in the least degree, other deities with God.

### Articles of Faith

The Koran (2.177) lays down that a Muslim must believe in God, the last day, the angels, the books revealed by God, and in all the prophets of whom Mahomet is the last. Among these prophets are Moses and the other prophets of the Old Testament, and Jesus. Elsewhere in the Koran it is stated that every nation on earth has had a warner sent to it. The idea that a Muslim believes in predestination is erroneous and a more accurate translation of the word Qadar, which has been translated predestination, would be the law of God by which He rules the universe and which every Muslim must accept as immutable. Muslims believe in the finality of death, to be followed by a life to come in which everyone will be judged and rewarded according to their deeds on earth.

The practices or pillars of Islam enjoined in addition to the above article of faith are prayer, charity, fasting, and the pilgrimage to Mecca. A Muslim is commanded to say five daily prayers of differing lengths in a set form and preferably in the Arabic language, although it is permissible to say prayers in any other language. These are not detailed in the Koran, but the practice of the Prophet as related in the traditions is closely followed. Each prayer must be performed in a state of physical cleanliness achieved by ablutions of the hands, mouth, nose, face, and neck, forearms, head, and feet. The times of prayer are: when it is beginning to get light before the dawn, at noon, when the sun has half-way declined to the setting, just after sunset, and one-and-a-half to two hours after sunset. Each prayer, which is preceded by the call to

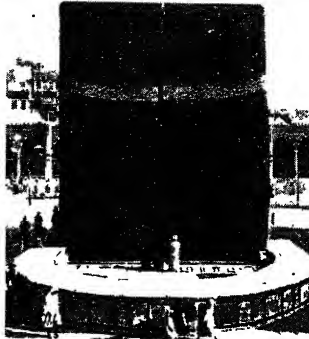
prayer (Azān) given by the Muezzin and consists of two parts, one said in congregation and the other alone, contains a certain number of ritual motions accompanied by a number of recitations of the Fātiḥah or opening chapter of the Koran and other portions, and ending with the words of greeting to right and left. The day of congregation with the Muslims is Friday, when they assemble in a mosque to hear a sermon given by the imam followed by a short congregational prayer led by the imam. During the year there are two festivals, the lesser on the first day of the month following the month of Ramadān, and the greater on the 10th of the month of the pilgrimage to Mecca, which day marks the culminating day of that great annual event. On each of these two occasions short congregational services are held, followed by a sermon on the importance and meaning of the day celebrated.

Charity is enjoined on the Muslim not only in the broad sense of doing good to his fellow-creatures but it is incumbent on him to spend one-fortieth of his capital every year for charitable purposes.

#### The Month of Ramadān

Fasting is also of great importance, and to this purpose one whole month of the year, the month of Ramadān, consisting of thirty days, is devoted. During this period no food or drink passes the lips from about two hours before sunrise until sunset. Smoking, too, is discontinued. As the Muslim calendar is a lunar calendar the month of Ramadān falls ten days earlier each year so that the Muslim is not spared the trial of fasting throughout the long and hot summer days. It is a very powerful discipline and a true test of the believer's will-power and stamina when it occurs in summer or in latitudes which enjoy a great deal of daylight.

The last pillar of Islam is the pilgrimage to Mecca, a very ancient custom of the Arabs going back traditionally to the time when the patriarch Abraham built a mosque in Mecca in thankfulness for God's remitting his proposed sacrifice of his son Ishmael. It is to be noted that the Muslims believe it was Ishmael, the ancestor of the Arabs, that Abraham was prepared to sacrifice, and not Isaac. It is the duty of the Muslim to go on pilgrimage to Mecca at least once in his lifetime if he can find the means to



Mahomedanism. The Ka'aba containing the sacred black stone, in the central court of the great mosque at Mecca. Each pilgrim walks three times round it

do so. In the first ten days of the pilgrimage month an immense host of Muslims of all colours and races from the farthest ends of the earth assemble in Mecca all dressed in the same garment, two unsewn white sheets, regardless of their rank or learning or other worldly differences. The ritual of the pilgrimage consists of circumambulating the Ka'aba or central edifice of the great mosque towards which all Muslims face when they say their prayers no matter where they may be, kissing the Black Stone, a traditional relic of Abraham's original mosque which is built into the eastern corner of the Ka'aba, running between Safā and Marwa, the march to Minā, and assembly on Mount 'Arafāt to hear the sermon. On the conclusion of these rituals animals are sacrificed and the flesh given to the poor. The main significance of the pilgrimage is that it brings together Muslims from all parts of the world to get to know one another and the particular problems that face them

in their various countries. After visiting Mecca for the pilgrimage the pilgrims generally travel N. to Al-Medinah where they visit the grave of the Prophet and the scenes of his success. Apart from the regular annual pilgrimage the Muslims can visit the holy places of Islam at any time. This is known as the lesser pilgrimage.

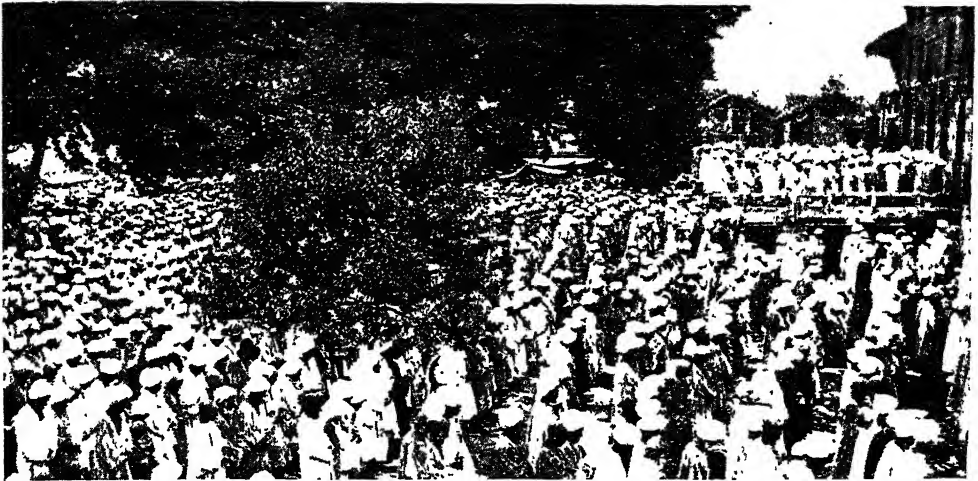
As regards the regulations of his daily life laid down by the Koran, a Muslim is forbidden by his religion to eat the flesh of the pig or any animal which has not been slaughtered in the name of God. Intoxicants are not approved of, and gambling and the exaction of usury are prohibited. Marriage is enjoined on all men who can marry and a Muslim is allowed to have as many as four wives provided he is sure he can treat them all alike. As a matter of fact, monogamy has become the rule rather than the exception in all Muslim countries. The old idea, long prevalent in Europe, that women were considered to be without souls is quite wrong. Divorce is permitted, although the Prophet is reported as having said, "With God the most detestable of all permitted things is divorce."

#### History Since Mahomet

On the death of the Prophet, isolated attempts were made by a few Arab tribes to regain their previous independence from the central authority and to indulge in a life of brigandage and lawlessness, but the energetic action of the first successor or caliph, Abū Bekr, soon put a stop to these and turned the unbounded energies of the desert Arabs into other channels. It was under the successors to the temporal and to a certain extent the spiritual power of the Prophet that the great expansion took place which carried Islam and



Mahomedanism. Marabouts of the Algerian Sahara in the third posture of the great prayer offered during the month of Ramadān



Mahomedanism. Natives of the Hazara district of the N.W. Frontier Province, Pakistan, at prayer during Ramadan. This is the month of the Mahomedan year when fasting from about two hours before dawn to sunset is compulsory. When Ramadan falls in the hot season, it is a severe disciplinary trial, as drink as well as food is forbidden.

the Arabic language to the Atlantic Ocean in the W. and to China in the E.

Within ten years of the Prophet's death the Arabs had subdued Persia, Syria, and Egypt, and within a hundred years their empire extended from Spain to central Asia. The two principal Arab dynasties which ruled this empire were the comparatively lax Umayyads (660-750), who made their capital in Damascus, and their successors, the 'Abbasides (750-1258), who transferred the seat of the caliphate to Iraq and founded the city of Bagdad. It was under the 'Abbasides that the four schools of theology and law appeared. These are the Hanafite, founded by Imam Abū Hanifa (d. 767), the Malikite, founded by Imam Mālik, the Shāfi'ite, founded by Imam al-Shāfi'ī (d. 819) and the Hanbalite, founded by Imam Ibn Hanbal (d. 855). These codes of law are based on differing interpretations of the Koran, but differences only in detail not in substance. Later, in addition to the Koran, the Sunna or Practice of the Prophet was accepted as an authority on points of conduct of the Muslim's life which are expressly indicated in their revealed book. This practice is contained in six canonical books of traditions considered as authoritative by orthodox Muslims. The best known of these collections is the one by Imam Al-Bukhara (d. 869) and the other five were compiled during the following half century.

The great disagreement which divides the Muslim world in two rests on the acceptance or non-acceptance of these six canonical books. Those who accepted the Practice (Sunna) of Mahomet as contained in these collections are known as Sunnis. The party (Shi'a) of 'Ali, cousin and son-in-law of the Prophet, on the other hand, reject the traditions handed down by his companions and substitute another of their own, in which 'Ali is the prominent figure. These are known as the Shi'ites and have their stronghold in Persia, though there are a number of additional communities scattered throughout the Muslim world.

#### Decline and Reform

After the disastrous Mongol invasions which destroyed the 'Abbaside caliphate in 1258 Islam in its widest sense ceased to be a temporal power, although the process of decay and disruption had begun some centuries before. Under the Ottoman Turks a faint reflection of the splendours of the early 'Abbaside period was achieved, but for some two or three centuries before the first real contact with Europe, occasioned by Napoleon's invasion of Egypt, Islam remained in a deep sleep. The process of awakening took some hundred years and it was not until towards the end of the 19th century that the Muslims became aware of the fact that they were living in a dead world and could not hope to compete with Europe intellectually and materially without reform of their religious and social

outlook. A movement of reform was inaugurated by the Egyptian Shaikh Mohammed 'Abduh (d. 1905) and his school under the influence of a religio-political reformer, Shaikh Jamāl-al-Dīn al-Afghānī.

Islam is and always has been a missionary religion, and continues to make many converts in Africa, Asia, and, to a small extent, in Europe. Actual figures of the number of adherents to this religion throughout the world are not available, but Muslim scholars put forward the figure of from 350 to 400 million, which does not seem to be an exaggeration. During the Second Great War the Muslim states became alive to the important position they held in the Old World, lying as they do across its most important artery, and possessing its principal source of oil. Whether they make worthy use of that realization is a question which can only be answered by history.

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**Mahomet** or **MOHAMMED** (c.570-632). Prophet of Islam. He was born of the tribe of Koreish in Mecca. His father died before the child's birth, and his mother when he was six. He was cared for by his grandfather, who, though poor, was a leading citizen of Mecca, and, after his death, by his uncle Abu-Talib. At this time there were many Jews in Arabia, especially in Medina and N. of it, and Christianity had also penetrated into the country both from the Greek empire and from Abyssinia. The bulk of the Arabs were, however, idolaters, and worshipped the moon and planets as well as sacred stones. The chief centre of this worship was the Ka'aba (q.v.) at Mecca, at which an annual pilgrimage or fair was held. From Mecca also two caravans were dispatched, one to Syria in summer, and one to the Yemen in winter. Mahomet is said to have accompanied his uncle Abu-Talib on one of these trading expeditions to the N. at the age of 12, and again at 25 he repeated the journey as the agent of a rich widow of Mecca, who married him.

Mahomet, thus placed beyond the fear of want, turned to religion. His high reputation at this time among his fellow citizens is shown not only by the trust reposed in him in money matters and in affairs of religion, but in his fidelity to his first wife while she lived. He believed himself to be the recipient of revelations from God through the angel Gabriel. His wife, some of his kith and kin, and a few slaves were immediate converts, but the bulk of his fellow townsmen paid little heed to him. When he began to attack their religion, they replied with persecution. Under this persecution a number of Mahomet's disciples migrated to Abyssinia, but just as his mission appeared about to end in failure, help came from an unexpected quarter.

#### The Hejira

The city of Medina had long been distracted by a feud between its two Arab tribes, the Aus and the Khazraj. As a last resort they invited Mahomet, whose doctrines they had learned at the annual pilgrimage to Mecca, to come and keep the peace between them. Gradually his followers slipped away to the northern city, until Mahomet, his bosom friend Abu-Bekr, and his cousin Ali alone were left. On July 16, 622, the two former made their escape (*hejira*), and Ali soon followed.

Mahomet was now engaged in warfare against Koreish and the surrounding Arab tribes. He hoped for the conversion of the Jews, but, on their rebellion, he massacred one of the two Jewish tribes of Medina and expelled the other. He gradually extended his territory until, within eight years after he had left Mecca as a fugitive, he entered it as a conqueror. He died master of Arabia.

#### Prophet and Political Ruler

The public life of Mahomet is split into two halves so distinct that he seems to be in each a different person. In Mecca he was a prophet like one of the prophets of Israel. His sole aim was the conversion of his people from idolatry. The portions of the Koran composed at this time abound in glowing insistence on the unity of God, and in highly coloured descriptions of the Day of Judgement, the bliss of Paradise, and the terrors of hell. In this period Mahomet's proscription of the use of force and his patience under persecution are outwardly Christian, though the Koran shows that his inmost feelings were not so.

In Medina, on the other hand, he became a political ruler. The end in view, the conversion of Arabia, was still the same, but now the end justified any means. According to the statements of some authorities, assassination and murder in cold blood were recognized as legitimate; the conversion of chiefs was bought with presents of cattle; the loyalty of the most powerful converts was secured by numerous marriages; revelations were invented as occasion seemed to require. The fact remains that even his most intimate friends, such as Abu-Bekr, continued to believe in him to the last. The secret of his success lay in his urbanity. He became all things to all men and combated them with their own weapons. He never refused an invitation, and never departed from the severe simplicity of the Arab life. He was *princeps inter pares*, and shared in all the dangers and hardships of his followers. He preferred the reality to the semblance of power. He had one single aim throughout his life, and, though latterly by devious paths, he attained his goal.

The best source for the life of Mahomet would be the Koran, composed by himself during the last 23 years of his life, were not its language and allusions so cryptic as to be unintelligible without the aid of later bio-

graphies. Next comes the contemporary poetry of his adherents, especially his "court-poet," Hassan ibn Thabit, and of his enemies. The defect of this source is that much of it cannot be accepted as genuine. We are thus thrown back upon the four accepted biographies—that of Ibn Is-hak (d. 768), which has been preserved to us in the larger biography of Ibn Hisham (d. 833), and also in the general history of Tabari (d. 922); the book of Mahomet's campaigns by Wakidi (d. 822); and the lives of Mahomet and his companions by Wakidi's secretary Ibn Saad (d. 844). In addition to these there are books of traditions of Mahomet's "table-talk" and habits of life, of which the oldest is that of Malik ibn Anas, who died in Medina in 795, and the best known that of Bokhari, who died in Bagdad in 869. From these sources the general outline of Mahomet's life can be reconstructed with comparative certainty, though tradition varies as to the order of the later events. See *Hejira*; *Mahomedanism*.

T. H. Weir

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**Mahón.** For details of this town in the Balearic Island of Minorca, refer to *Port Mahón*.

**Mahon**, CHARLES JAMES PATRICK (1800-91). Irish adventurer. Better known as The O'Gorman Mahon, he was born at Ennis, Clare, March 17, 1800, and represented it in parliament, 1847-52. He then travelled extensively, and served in the armies of Turkey and Austria. In 1862 he was fighting in Uruguay and espoused the Federal cause in the American civil war. Returning to Ireland in 1871, he supported Parnell (q.v.) and was elected member for Clare in 1879. He sat for Carlow from 1887 until his death in London, June 15, 1891. His life was written by Denis Gwynn, 1934.

**Mahon**, PATRICK (ex. 1924). British murderer. On April 10, 1924, Mahon met Ethel Duncan, and decided to rid himself of Emily Kaye, with whom he had been on intimate terms for a year. On April 12 he arranged for Emily to meet him at his bungalow at the

Crumbles, near Eastbourne. She was killed, probably by strangling, and her body locked in a bedroom, where it remained while Ethel Duncan was staying at the bungalow. After taking Ethel Duncan back to London, Mahon returned to the Crumbles, where he dismembered the corpse, burning or boiling the fragments.

Mahon's wife found a cloakroom ticket in his pocket and engaged a private detective to make investigations. At Waterloo station a bag was found containing a woman's bloodstained garment and a long knife. When Mahon arrived on May 2 to claim the bag, he was arrested. The police found bones on the shingle outside the bungalow, the rest of the body being packed in various receptacles. The trial began at Lewes on July 15. Mahon was hanged on Sept. 3.

**Mahony, FRANCIS SYLVESTER** (1804-66). Irish humorist. He was born in Cork and educated first for the Jesuit order. A brilliant scholar, under the pseudonym of Father Prout he did much to establish the success of Fraser's Magazine. He also contributed to Bentley's Miscellany, was Rome correspondent of the Daily News, 1846-47, and in later years, when he lived in Paris, was correspondent of The Globe. The Bells of Shandon is a well-known poem by him. He died May 18, 1866.

**Mahratta** or **MARATHA**. People in W. and Central India. Besides its stricter caste usage, the name also denotes loosely the medley of castes and tribes—such as Kunbis—speaking the 39 dialects of Marathi, which forms the S. group of Indo-Aryan languages. They number about 24 millions of whom a quarter are Mahrattas. Brahmans represent the fullest Aryan strain; the Kshattriya upper classes and the Sudra peasantry are aboriginals more or less definitely Aryanised, or descendants from non-Brahman camp-followers in the Mahratta armies.

The medieval Maharashtra kingdom occupied a triangle from Nagpur to the W. coast towns Daman and Karwar. The Mahratta power established at Poona by Sivaji in 1657 fell to pieces after his death in 1680, forming a loose confederacy, including Gwalior, Baroda, Indore, etc., long hostile to Great Britain. There were Mahratta units in the British Indian army; in 1921 the title of royal was conferred on the 117th Marathas in recognition of distinguished services during the First Great War. In 1922

the designation was changed to 5th Royal Battalion, 5th Mahratta Light Infantry. Mahratta Brahmin, e.g. G. K. Gokhale, played a prominent part in the Indian nationalist movement. See India.

**Mahratta Wars**. Four campaigns between the British and the Mahratta people of Hindustan. The first war, 1778-82, was fought over the succession of the peshwa, or chief, of the confederacy. There were two candidates, and Britain ineffectually intervened in favour of her own nominee, but conquered Gujarat and captured the strong fortress of Gwalior. The treaty of Salbai restored these conquests in 1782. The next campaign, begun in 1803, was undertaken to assist the peshwa, Baji Rao II, who was at variance with Sindia and Holkar, two powerful chieftains of the confederacy. The war is mainly notable for the skilful generalship of Wellesley, later duke of Wellington, who, at Assaye, Sept. 23, 1803, defeated Sindia against great odds. General Lake's actions at Farrukhabad and Laswari completed the British successes, and the Mahratta chieftains thereupon sued for peace.

The third war broke out in 1816, largely owing to Baji Rao II, who had grown impatient of the continual presence of the British in his dominions. The revolt was finally crushed in 1818, and the peshwa made a prisoner by Sir John Malcolm. The Mahratta confederacy was dissolved, and much of their territory fell into British possession. The last war was undertaken in 1843 to restore order in Gwalior, the province ruled by Sindia. The battle of Maharajpore, Dec. 29, 1843, fought against great odds by Sir Hugh Gough, practically concluded the campaign. See India; Sindia.

**Mahsud**. Pathan sub-tribe in S. Waziristan, N.W. Frontier prov., Pakistan. Occupying the mt. region between the Tochi and Gomal upper valleys, they hold the Gomal pass leading to the level Derajat plains W. of the Indus. They share the democratic temperament and Waziri speech of the S. Pathan peoples, but are wilder and more predatory than the N. Waziristan Waziris. Their three main clans are estimated to furnish 10,000 fighting men. In 1917-21 they were in a state of rebellion, and punitive operations were undertaken against them by the British. See Waziristan.

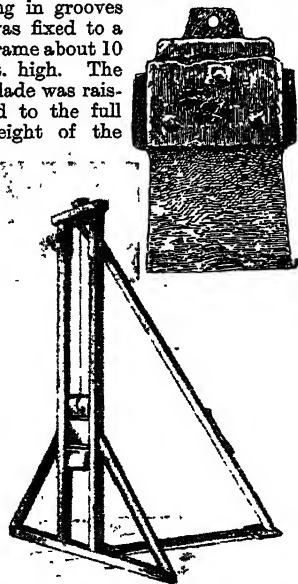
**Maia**. In Greek mythology, eldest of the Pleiades (*q.v.*). By Zeus she was the mother of Hermes.

**Maida**. Town of Italy, in the prov. of Catanzaro. It is 30 m. W.S.W. of Catanzaro on the main road to Pizzo. On the neighbouring plain Sir John Stuart, in command of a British force dispatched to assist the dispossessed Bourbons, defeated the French troops under Regnier, July 3, 1806.

**Maidanek**. Site, near Lublin, Poland, of a German extermination camp during the Second Great War. The camp was overrun by the Russians, July 24, 1944; they found there prisoners of war from the Polish armies of 1939, Russian prisoners, and citizens, some of them Jewish, of Poland, France, Belgium, Italy, the Netherlands, Czechoslovakia, Greece, Yugoslavia, Denmark, and Norway. A Russo-Polish commission of inquiry established that 1,380,000 corpses of people killed in the camp by shooting, gas, starvation, and torture had been burned in furnaces and on bonfires.

**Maida Vale**. London thoroughfare and district, largely residential. The thoroughfare is that part of Edgware Road which runs from the Gr. Union Canal to Kilburn. The E. side is in the bor. of Marylebone, the W. in that of Paddington. The name commemorates the battle of Maida.

**Maiden**. Instrument of execution formerly used in Scotland, and occasionally in the N. of England. In design it was not unlike the guillotine. A weighted blade moving in grooves was fixed to a frame about 10 ft. high. The blade was raised to the full height of the



Maiden. Scottish instrument of execution. Top, blade of maiden, preserved in Edinburgh



frame and then released, beholding the victim. It was first used in 1561. Its victims included the earl of Morton, beheaded in 1581, who is alleged to have been its inventor. A specimen is preserved in the museum of the Society of Antiquaries, Edinburgh. See Capital Punishment; Guillotine.

The word maiden is also used for first things of their kind, e.g. maiden speech in parliament and maiden voyage of a ship. A maiden over at cricket is an over in which no runs are scored off the bowler. In some parts of the N. of England a clothes-horse is also known as a maiden.

**Maiden Castle.** A prehistoric earthwork near Dorchester, Dorset, England. Begun in Neolithic times, the whole hill, 432 ft. high, and embracing 160 acres, was enclosed in the Bronze Age. There are three ramparts on the N. and four on the S. The entrance is guarded by trenches for enfilade defence. The name may denote a stronghold suitable for women. Inhabitants of the district lived there before 2000 B.C., practising

**Maidenhair Tree** (*Ginkgo biloba*). Tall tree of the family Ginkgoaceae, native of China. It



Maidenhair Tree. Stem and foliage

has broad, fan-shaped leaves, cloven at the summit and with notched margins. The male flowers, borne on a separate tree from that which bears female flowers and fruit, form a sort of catkin, consisting of numerous stamens seated on a long spike. The females consist of ovules only, at the summit of long stalks. When fertilised these develop into plum-like fruits; the seed is in a hard shell enclosed in a fleshy edible wrap.

**Maidenhead.** Market town and mun. borough of Berkshire. It stands on the right bank of the Thames, 24 m. from London, with a station on the main line. The town industries include brewing and art metal work, but it is now chiefly known as a boating centre. The bridge across the Thames dates from 1772. The corporation dates from the



Maidenhead arms

is due to the influence of the Morris dance and May games. She is often known as Queen of the May. In some ballads she is a lady of high degree, who assumed the name of Maid Marian when she joined her lover Robin in the greenwood. See Robin Hood.

**Maid of Honour.** Unmarried lady in personal attendance on a queen. In the British royal household the maids of honour are in the lord chamberlain's department, and are "in waiting" two or three weeks at a time. Usually daughters or granddaughters of peers, and styled "honourable," they take precedence between daughters of barons and wives of knights of the garter. On marriage they are granted a dowry by the queen, if she approves the match. A kind of cheese-cake made at Richmond, Surrey, is known as a "maid of honour." See Royal Household.

**Maid of the Mountains, THE.** Musical play, with libretto by Frederick Lonsdale and music by H. Fraser-Simson and J. W. Tate. First produced at Daly's theatre, London, Feb. 10, 1917, with José Collins as the star, it became one of the most popular musical comedies of its day and ran until Dec. 26, 1921, being played 1,352 times. Revivals included those at the London Hippodrome, 1930, and Coliseum, 1943.

**Maidstone.** Mun. borough and market town of Kent, also the county town. It stands on the Medway, mainly on the eastern side, 34 m. S.E. by road from London, and has two rly. stations. The chief church is All Saints, a large Perpendicular edifice, once a collegiate church. S. Peter's Church was originally the chapel of a hospital founded by Boniface of Savoy, archbishop of Canterbury. The 16th century grammar school is housed in a modern building. Its picturesque riverside front visible from Maidstone bridge, the old palace of the



Maiden Castle, Dorchester. Part of the prehistoric earthwork

agriculture and tending cattle and sheep. Traces of circular houses and baking pits have been found within the fortifications, also an armoury containing some 5,000 sling stones. The defences were demolished after the Roman conquest. Consult Maiden Castle, Dorset, R. E. M. Wheeler, 1941.

**Maidenhair Fern** (*Adiantum*). Herb of the family Polypodiaceae. Natives of tropical and temperate climates, they have delicate, much divided fronds. *A. capillus-veneris*, the common maidenhair fern, is a native of Britain, but now rare, and *A. pedatum* is common in the U.S.A. Given shade and moisture, they thrive under greenhouse treatment in a temperature of 60-70°, and require a soil chiefly of leaf-mould, loam, and sand.

time of Elizabeth, and the town had fairs in the Middle Ages and later. It is now governed by a mayor and council, which maintains a library, museum, and baths. There is a hospital. At White Waltham is a civil airfield. This was the headquarters of the Air Transport Auxiliary ferry organization in the Second Great War. Pop. 25,950.

**Maid Marian.** One of the chief characters in the later poems of the Robin Hood cycle. Her appearance therein



Maidenhead, Berkshire. Riverside road, with the Bath Road bridge across the Thames seen in the distance



archbishops still stands, while another building, a 16th century manor house, contains the museum,



Maidstone arms

art gallery, and free library. The archbishop's stables, now known as the tithe barn, houses a collection of ancient carriages. Other buildings are hospitals, the school of science and art, gaol, and barracks, and those used for county business. There are the ruins of a 14th century building, once a college for priests.

Maidstone is in the middle of the hop fields. It has also manufactures of agricultural implements, paper, food products, rope, beer, toffee, etc., also malting, quarrying, and engineering works. It is governed by a mayor and corporation.

Maidstone existed in Anglo-Saxon times. Penenden Heath, just outside the town, was from early times the place where the men of the county met, and where criminals were hanged. It is now a public recreation ground. Maidstone became an assize town, and was incorporated, in the 16th century. It was represented in Parliament until 1918, and from 1950 gave its name to a co. constituency. A rising of royalists here, in 1648, was crushed by Fairfax. It is the birthplace of William Hazlitt. Pop. est. 49,730.

**Maikop.** Town in autonomous area of Adigisk, R.S.F.S.R. It stands on the Bielaia, 65 m. S.E. of Krasnodar. It is the chief commercial centre of a district that produces a great quantity of oil, and is connected with Tuapse on the Black Sea by an oil pipeline. During the Second Great War the Russians, after destroying the oil wells, evacuated Maikop, Aug. 16, 1942, during the German drive for the Caucasian oil fields. On Jan. 30, 1943, Russian troops recaptured Maikop, the German offensive having failed. Pop. 67,302

**Maikov,** APOLLON NICOLAIEVITCH (1821-97). Russian poet. Born in Moscow and educated, with the intention of becoming an artist like his father, in St. Petersburg and Italy, he took to literature. His first volume of poems,

1842, was followed by epics on historical themes, Savonarola, The Queen's Confession, and others; and by two lyrical dramas, Three Deaths and Two Worlds, dealing with the struggle between the Greco-Roman and Christian worlds.

**Maillol, ARISTIDE JOSEPH BONAVENTURE** (1861-1944). French sculptor. Born Dec. 8, 1861, at Banyuls-sur-mer, Pyrénées-Orientales, he studied at Perpignan and worked in the studio of Cabanel and at the Beaux Arts. He abandoned painting for sculpture in 1900, first carving direct rather than modelling. Large statues in stone and bronze established his reputation; a one-man show in Paris, 1904, attracted attention to his static, three-dimensional work, influenced by early Greek, Chinese, and Egyptian forms. An important work was the monument to Cézanne at Aix-en-Provence, and his finest sculptures include many small terra-cottas. Examples are in the chief European and American galleries. He died as the result of injuries after a motor accident in Sept. 1944.

**Maimachin.** Chinese frontier town in Outer Mongolia. It faces Kiakhta, its counterpart on the Russian side of the border. The name signifies Chinese mart. Its once flourishing caravan trade has diminished since the advent of the Siberian and Manchurian rlys.

**Maimana.** Minor province of Afghanistan. Formerly a semi-independent Uzbeg state, on the border of Turkmen S.S.R., it has an area of 4,759 sq. m. Its chief town, Maimana, a road junction for Herat and Kabul, was a place of some importance before it was taken in 1874 by the Afghans, who massacred a large number of the inhabitants. It still has a trade in horses and fruits, and makes carpets.

**Maimansingh.** Dist. and town of Bengal better known as Mymen-Singh (*q.v.*).



Maillol. La Méditerranée, sculpture by Aristide Maillol in the courtyard of the Hôtel de Ville, Perpignan  
Photo, Vizzavona

**Maiming.** Term used in English law for the loss of a part of an animate creature's body necessary for fighting. In the case of human beings the word mayhem (*q.v.*) is more usual. The word maiming is more used in connexion with injuries to animals. Under the Malicious Damage Act of 1861 it is a felony to maim, *i.e.* permanently injure, or wound, any cattle, horses, or other domestic animal. Of a number of remarkable epidemics of cattle and horse maiming in the U.K. the most notorious is that known as the Great Wyrley outrages in Staffordshire, which began in 1903 and continued intermittently for many years; they were usually preceded by warning letters sent to the police.

**Maimonides, MOSES** (1135-1204). Jewish rabbi and philosopher. Born at Córdoba, March 30, 1135, he studied Aristotelian philosophy, medicine, and other sciences, among his teachers being Averroës. Driven from Spain by persecution, he settled in Egypt, became physician to Saladin, and lectured on philosophy at Cairo and also at Alexandria, where he founded a Jewish college. He died at Cairo, Dec. 13, 1204. In many works in Arabic and Hebrew he endeavoured to reconcile the claims of faith and reason. His independent thought and the boldness with which he rejected much Rabbinical tradition aroused hostility, though he was afterwards recognized as one of the greatest Jewish teachers. His chief work, first written in Arabic, The Guide to the Perplexed, was once used in European universities: Eng. trans. M. Friedlander, 3 vols., 1885.



Maidstone. Church of All Saints and old houses from the Medway  
Firth

**Main.** River of Germany, a tributary of the Rhine. It rises in two headstreams, the Red and White Main, in the Fichtelgebirge on the edge of the Bohemian plateau, and flows W. to join the Rhine at Mainz, after 300 m.

Its tribs. include the Tauber, Saale, and Regnitz; through the last it is connected by Ludwig's Canal (*q.v.*) and the Altmühl with the Danube. A plan to build a new canal link between the Main and the Danube, from Würzburg to Regensburg, was discussed in 1950. Navigation of the Main extends 240 m. above the town of Mainz, the portion between Mainz and Frankfort being canalised and specially equipped for assisting traffic up stream. Besides Mainz and Frankfort, the chief towns in the basin are Nuremberg, Würzburg, and Aschaffenburg. In the Middle Ages the lower valley formed part of an historic route N.E. from Mainz to Kassel and the Weser Valley for the North German plain.

**Main.** River of Antrim, N. Ireland. It enters Lough Neagh below Randalstown after a S. course of 30 m., and is noted for its salmon.

**Maine.** Name of one of the provinces into which France was divided before the Revolution. It lay between Normandy, Brittany, and Anjou, and its capital was Le Mans, both names being derived from that of a Gallic tribe, the Cenomanni. It began as a district round Le Mans corresponding to the diocese of that city, and was ruled in the 9th, 10th, and 11th centuries by counts, vassals of the counts of Anjou. About 1100 Maine was united with Anjou, then ruled by the Plantagenet family, and in 1154, when Henry II became king of England, it became an English possession. In 1204 it was retaken by the French king, Philip Augustus, and again it had its own line of counts, junior members of the royal family. Before 1500 it was definitely merged into the kingdom of France, and from about 1600 to 1789 it was a province. It is now covered by the departments of Sarthe and Mayenne.

**Maine.** Most north-easterly state of the U.S.A., and the largest in New England. It contains West Quoddy Head, the most easterly point in the country. Its area of 33,215 sq. m. is greater than that of Scotland. Maine is bounded N. by Quebec, New Brunswick, and the Bay of Fundy. The coastline is much indented, and including that of numerous islands, measures

2,379 m., with many good harbours. Augusta is the capital and Portland the chief seaport; other places are Lewiston, Auburn, Bangor, and Biddeford. Pop. 847,226.



Maine arms

Maine is mountainous in the N.W., the highest point being Katahdin, 5,350 ft.; ten other peaks exceed 4,000 ft. and hundreds are over 2,000 ft. One-tenth of the surface is covered with water, including 1,620 lakes; Moosehead being 35 m. long and from 2 to 10 m. wide. There are over 3,000 rivers and streams, those which provide water power including the Kennebec, Penobscot, Androscoggin, Saco, St. John, and St. Croix. Among wooded islands is Mount Desert. Maine is one of the chief summer holiday resorts of the U.S.A.

About 65 p.c. of the land area is forested, mostly coniferous, and lumbering is an important industry, the principal woods being white pine, spruce, birch, hemlock, balsam, oak, maple, cedar, ash, and beech. Maine is the chief producer of pulp and paper in the U.S.A. It is also first in potato output, and other crops are maize, which is canned, oats, buckwheat, and apples. The fisheries are valuable, there is shipbuilding at Bath, and cement, limestone, slate, sand, gravel, and granite are worked. Fish, fruit, and vegetable canning, and the manufacture of textiles and boots and shoes are industries. The state has 1,828 m. of rly., connected with the Canadian system. Two senators and three representatives are returned to congress. The university is at Orono.

It is believed that Sebastian Cabot visited the coast in 1496, and that Norsemen may have done so as early as 1000. English and French tried to found settlements in the territory; the Popham colony, established at the mouth of the Kennebec in 1607, would have antedated Jamestown as the first permanent English settlement in America had it survived. There were built the first church, block-house, and ship in America. In 1622 the council of New England granted to Sir Ferdinando Gorges and John Mason a great tract of land between Kennebec and Merrimac. Gorges established Gorgeana, now York, in 1641 as the first capital of the province and the first chartered city in America.

While England was under Commonwealth rule, Massachusetts took possession of the settlements in Maine, and the territory was formally incorporated in 1691. In 1820, as the result of agitation followed by a popular vote, it was again made a separate state.

The treaty of 1783, which gave the U.S.A. its independence, endeavoured to fix the state boundary with Canada, but the clause was ambiguous. In 1839 the N.E. boundary dispute nearly led to war between Great Britain and the U.S.A.; this was averted by the Webster-Ashburton treaty of 1842, but the agreement was not permanently successful, nor were those of 1846 and 1870. The boundary was finally settled by the Bryce-Knox treaty of 1910. In 1947 a severe drought throughout the state culminated in a series of disastrous fires which destroyed 110,000 acres of standing timber and property worth \$6,000,000, and rendered over 6,000 people homeless. The federal authorities declared Maine a distressed area. *Consult* Maine, Its History, Resources, and Government, G. Starkie, 1930.

**Maine.** Name of a U.S. battleship blown up in Havana harbour, Feb. 15, 1898, with a loss of 250 officers and men. The incident led to war between the U.S.A. and Spain. *See* Spanish-American War.

**Maine, Sir Henry James Sumner** (1822-88). A British jurist. Born in India Aug. 15, 1822, he was educated at Christ's Hospital and Pembroke College, Cambridge, being senior classic in 1844. In 1847 he was chosen regius professor of civil law at Cambridge, and



Sir Henry Maine, British jurist

in 1850 he became a barrister. Professor of jurisprudence at Oxford, in 1877 he was chosen master of Trinity Hall, Cambridge, in 1887 professor of international law, and he died at Cannes, Feb. 3, 1888.

In 1861 appeared Maine's *Ancient Law*, which is regarded as the starting point of the study of jurisprudence. He also wrote *Village Communities in East and West*, 1871, *The Early History of Institutions*, 1875, *Early Law and Custom*, 1883, and *Popular Government*, 1885.

**Maine de Biran, Marie François Pierre Gonthier** (1766-1824). French philosopher and

politician. Born at Bergerac, Nov. 29, 1766, he became a member of the bodyguard of Louis XVI, but after the king's death retired to his estate and gave up his time to study. As a royalist he took some part in politics before 1815, and after this was treasurer to the chamber of deputies. He died in July, 1824. As a philosopher, Maine at first held the sensualistic views of Condillac, but afterwards took up the theory of the exertion of power by an ego that wills, as opposed to a non-ego that resists, the object.

**Maine-et-Loire.** A dept. of France. Part of the old prov. of Anjou, it is roughly bisected by the Loire, other rivers, all in the Loire basin, being the Authion, Maine, Sarthe, Loir, Layon, and Moine. Rly. lines centre on Angers, the capital, the other chief towns being Baugé, Cholet, Saumur, and Segré. The country is generally hilly, except in the N.W., and there are slate, freestone, and granite quarries, and some coal deposits near Chalonnes. The agricultural products include wheat, barley, oats, hemp, and beet; nursery gardening and fruit growing are carried on; and the vineyards are of importance, the vintages of Saumur being well known. Area, 2,811 sq. m. Pop. 475,991.

**Mainotes.** Inhabitants of the Maina peninsula, formed by the ridge of Mount Taygetus between Sparta and Cape Matapan, in southern Greece. Although boasting Spartan descent, they probably include a Pelasgian substratum. In their inaccessible fastnesses they preserve a pastoral habit, with olive cultivation, and some survivals of pagan belief.

**Mainpuri.** Dist. and town of India, in the Uttar union, in the Agra division. The district is situated in the middle of the Ganges-Jumna doab, away from both rivers. Wheat, barley, millet, and sugar-cane are the chief crops; 55 p.c. is cultivated; 70 p.c. of the total area is cultivable. The rainfall is 32 ins. annually.

The town is on the trunk road, and has railway connexions with Cawnpore and Agra; there is considerable trade in cotton, indigo, and wooden articles inlaid with wire. Dist. area, 1,679 sq. m. Pop. 872,601. Town pop. 18,500.

**Main Street.** Novel by Sinclair Lewis. Published in 1920, it established its author's reputation as a satirist of small town life in America's Middle West, and pillories the parochial narrowness and gossip of a community whose

superficial intellectualism despises its own existence but is unable to achieve anything better. In Main Street, Lewis exhibits to the full his gift of satire in dialogue, and his remarkable powers of observation. He does not so much draw characters as dissect them in public on an operating table. Main Street became a text book for attacks on provincialism and the complacency of intellectually stagnant middle-class communities. The original of Gopher Prairie, as Lewis called the town he satirised, was Sauk Creek, Minn., his birth-place.

**Maintenance.** Feudal practice whereby knights and gentry entered into bond with more powerful barons to assume their badge, or livery, and to serve under their banner in war in consideration of support of their private interests and maintenance in their lesser quarrels. As a result, immense power passed into the hands of the barons, and was retained until the end of the 15th century. Statutes were passed against livery and maintenance, but these were virtually disregarded until revived and enforced by Henry VII. *See* Cap of Maintenance; Feudalism; Livery.

**Maintenance.** Term used in English law. It is a tort to maintain another in an action at law, i.e. to meddle officiously in a suit by assisting either party with money or otherwise. It is not illegal maintenance to assist a plaintiff or defendant who is a relative or connexion, or a servant, or out of charity. Still less is it illegal to help to pay the expenses of an action in which one has some actual interest, e.g. where a man is sued for trespass, and other citizens subscribe towards his legal expenses so that he can establish a right of way. What is sought to be prevented is officious inter-meddling, particularly where the object is to vex and harass the other party to the suit. Maintenance is also a criminal offence, punishable on indictment.

The most famous action in modern times was *Bradlaugh v. Newdegate*. Charles Bradlaugh (*q.v.*) had incurred penalties by not taking the oath required of members of parliament, whereupon Newdegate maintained a third person to sue Bradlaugh for these penalties. The action failed and Bradlaugh then successfully sued Newdegate for maintenance. Maintenance was a serious menace to the administration of the law in the 15th and 16th centuries when the support of litigants by power-

ful individuals often made it impossible to obtain justice. The court of star chamber under the Tudors did much to suppress it.

**Maintenance Order.** Order which by English law a wife may obtain from a magistrate's court. Under this order her husband is required to pay not more than £5 a week for her maintenance and not more than 30s. a week for that of each child under 16. Where the child is engaged in a course of education or training, the order may be extended until the child is 21. The court may make a separation order—i.e. a state order that the wife is no longer bound to live with the husband—but this is not now the usual practice, as it will put an end to any desertion of which the husband may have been guilty, and so may prevent the wife from later obtaining a divorce for desertion under the Matrimonial Causes Act, 1937. A wife can obtain a maintenance order only if she can prove some misconduct on the part of the husband. Applications for maintenance orders are domestic proceedings, and are heard in special courts with limited publicity.

**Maintenon, FRANÇOISE D'AUBIGNÉ, MARQUISE DE (1635-1719).** Second wife of Louis XIV. The



*Maintenon.*  
After P. Mignard

daughter of a Huguenot, she was born in Niort prison, Nov. 27, 1635, but on their release her parents took her to Martinique. She returned in 1645 to France,

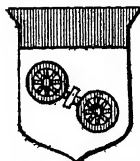
where her beauty and wit soon attracted attention, and her marriage with Scarron in 1651 introduced her to intellectual circles. Scarron died in 1660, leaving his widow almost destitute, but she was granted a pension, and in 1669 was engaged by Mme. de Montespan to educate the children she had borne to Louis XIV. Called to court, she soon attracted the royal attention, and in 1678 Louis created her a marquise.

Mme. de Maintenon, as she was now styled, possessed an intelligence which established her high in Louis's favour. Mme. de Montespan was discarded in 1680, and after the queen's death in 1683 the new mistress ruled supreme. In 1684 Louis privately married her, and for the remainder of his life she exercised almost unlimited

power over him, being largely responsible for his zeal for orthodoxy. In 1715, on his death, she retired to St. Cyr, where she had founded a school for girls, and died there April 15, 1719. There are Lives by C. C. Dyson, 1909; H. C. Barnard, 1934.

**Mainwaring**, SIR HENRY (d. 1653). English sailor. A son of Sir George Mainwaring, he was educated at Brasenose College, Oxford, afterwards studying law in London. In 1611 he obtained a commission to deal with pirates in the Bristol Channel, but soon himself began to follow their practices. He made Mamora, in N. Africa, his base, and in the Resistance was soon feared by the Spanish traders and seamen, on whom he inflicted heavy loss. He refused to accept a high position in the Spanish navy, a bribe offered to induce him to abandon piracy, but when James I took up the matter he decided to yield. He returned to England, and in 1616 was pardoned. *Pron.* Manna-ring.

**Mainz** (Fr. Mayence). One of Germany's oldest cities, the capital of the *Land* of Rhineland-



Mainz arms

Palatinate. Situated on the W. bank of the Rhine, opposite its confluence with the Main, connected with Kastel, on the E. bank, by a modern bridge blown up in 1945, and with Wiesbaden's suburb Biebrich by another, likewise damaged, Mainz was, until 1919, an important fortress. A main junction on the rly. lines Paris-Saarbrücken-Berlin, Amsterdam-Cologne-Basel, Paris-Nuremberg-Vienna, etc., as well as of the Rhine steamship lines and, with Wiesbaden, of civilian air lines, its river port handled up to two million tons of goods per year; its

suburbs, Gustavsburg, Gonsenheim, Rüsselsheim, etc., were industrialised, with metal and engineering, wagon and motor building, chemical, dye, food preserve, sparkling wine, paper, and printing works; it was also an important gardening and agricultural centre, especially of the wine trade. The university, which existed from 1477 to 1803, was reopened 1946. Mainz also had a teachers' seminary, musical high school, municipal theatre, etc., and many galleries and museums, one being devoted to printing, the invention of Mainz's most famous son, Gutenberg. Pop. (1949 est.) 108,000.

Founded about the time of the birth of Christ by Drusus as a Roman castle, Moguntiacum, on the site of a Celtic and Teutonic settlement, Mainz was the strategic centre of all Roman actions against the German tribes. By the third century a walled town, captured and destroyed several times, had developed round this fortress. It became a bishopric and, in A.D. 747, S. Boniface's archbishopric, a dignity in which many famous men were to follow him: Hrabanus Maurus in the 9th, Hatto in the 10th, Willigis, who helped on the building of the cathedral, in the 11th, Conrad of Wittelsbach in the 12th, Diether of Ysenburg, founder of the (former) university in the 15th, Albrecht of Brandenburg in the 16th century. The archbishops were first primates of Germany, then from about 950 arch-chancellors, and from 1273 electors of the Empire, and power-

ful territorial princes. But for over 300 years the citizens of "Golden Mainz," rich and powerful in turn, struggled, often in sanguinary battles, for their liberties against their ecclesiastical overlords; winning their complete freedom and an elected govt. in 1244, they created, 1254, the league of Rhenish cities, soon affiliated to the Hansa. They lost their privileges again, to archbishop Adolf II of Nassau, in 1462.

After suffering heavily from French and Swedish conquest, during the Thirty Years' War, and again by several severe battles in the wars of the French Revolution, 1792 and 1797, Mainz was ceded to France by the peace of Campo Formio, 1797; the archbishopric was transferred to Ratisbon (Regensburg), 1803; a French bishopric in what became the capital of the dept. of Mont Tonnerre was created in 1802. Returned as a fortress of the German confederation to Germany in 1814, the city was joined to Hesse in 1816, and was garrisoned by Austrian, Prussian, and Hessian troops until 1866. Bishop Baron von Ketteler (1850-77) was an outstanding R.C. leader.

On account of its industries the city was bombed from the air by

the Allies on a number of occasions during the Second Great War. The cathedral of S. Martin (975-1490) was reduced to ruins; S. Christopher's (13th), S. Emmeran's, S. Stephen's, S. Quentin's (all 14th cent.), S. Joseph's, S. Peter's, S. Ignatius' (18th), the Holy Ghost hospital (1237), the electoral palace



(1627-1752), the house of the Teutonic order (1720-37) survived, but were badly damaged. The city was occupied by U.S. armour and infantry on March 20, 1945, with little opposition, German resistance W. of the Rhine having collapsed. The city lay within the French zone of occupation after the surrender.

**Mais**, STUART PETRE BRODIE (b. 1885). British writer and broadcaster. Born July 4, 1885, he went to Denstone and Christ Church, Oxford. From school-mastering he turned to literary criticism and was with various London



Mainz (Mayence). General view (1945) of the city on the Rhine. Top, house in which Gutenberg is said to have set up the first printing press

newspapers, 1918-31. Broadcasting on books and on places in the British Isles, he also made a tour of the U.S.A. for the B.B.C. in 1933-34, broadcasting his impressions. Mais wrote more than 60 books about his favourite authors and districts, several novels, and an autobiography, *All the Days of My Life*, 1937.

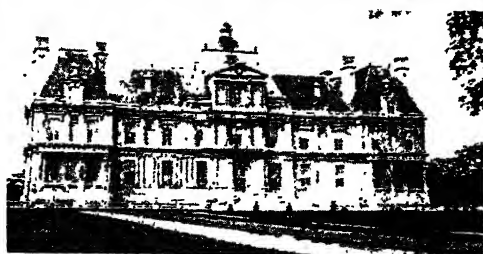
**Maisky, IVAN MIKHAILOVITCH** (b. 1884). Russian diplomatist. Born at Kirilov, Jan. 19, 1884, he



Ivan Maisky,  
Russian Diplomatist

attended an Omsk secondary school and St. Petersburg and Munich universities. Connected with revolutionary movements from the age of 15, he was several times arrested and twice exiled to Siberia; he lived also in Germany and England. After the 1917 revolution he joined the diplomatic service, and was chief of the press department of the commissariat for foreign affairs, 1922. Counsellor at the Soviet embassy in London, 1925-27, and in Tokyo, 1927-29; three years minister to Finland, negotiating a non-aggression treaty with that country; he was in 1932 appointed Soviet ambassador to Great Britain. Maisky carried through a Russo-British trade agreement in 1934 and the naval treaty of 1937. He signed pacts of mutual assistance with Poland and Czecho-Slovakia in 1941, and established diplomatic relations between his own country and Canada and S. Africa, 1942. Awarded the Order of Lenin in 1942, he became next year assistant commissar for foreign affairs in Moscow until 1946.

**Maison Carrée** (Fr., square house). Roman temple in the city of Nîmes, France. Among the finest survivals of Roman architecture, it is a rectangular building, 87 ft. by 45 ft., and of classic simplicity. Of its 30 Corinthian columns, each 29 ft. high, only 10 are disengaged from the walls, thus forming the prostyle, or porch, reached by a series of steps. The temple dates from the 2nd century at latest, and was dedicated to Gaius and Lucius Caesar, grandsons of Augustus. Used in turn as a church, warehouse, and stable, it was restored, 1824, as a museum. The temple probably stood in the forum of the old city. See Nîmes, *illus.*



Maison-Laffitte, France. View from the grounds of the historic château at Saint-Germain

**Maison-Laffitte.** Château and museum situated at Saint-Germain, France. It was designed in the 17th century by Mansart for René de Longueil, president of the parlement of Paris, and was known as the Château des Maisons, until it was acquired by the banker statesman, Jacques Laffitte, in 1818. Laffitte sold part of the grounds to enable the farm colony of the same name as the château to be started. The château has associations with the comte d'Artois, the comtesse du Barry, and Voltaire.

**Maisonneuve, PAUL DE CHOMEDY, SIEUR DE** (d. 1676). French administrator. He was born in Champagne, entered the army, and after serving in Holland, in 1641 led a religious expedition to Quebec. On May 14, 1642, he founded the town of Ville-Marie de Montréal (see Montreal), of which he was governor until 1665. Maisonneuve was sent back to France, where he died a disappointed man.

**Maistre, JOSEPH MARIE, COMTE DE** (1754-1821). French writer. Born at Chambéry, April 1, 1754, of a noble Savoyard family, he studied at Turin, and after holding posts in the civil service became a member of the senate of Savoy. When the French invaded and annexed the district he retired to Lausanne. Recalled to Turin, during 1802-12 he was Sardinian ambassador to St. Petersburg. Probably owing to his connexion with the Jesuits, he left Russia and returned to Turin, dying there Feb. 26, 1821. De Maistre was the founder of ultramontanistism, and a representative of the reaction against the materialism of the French illumination and against the Revolution. He upheld the temporal supremacy of the pope. Evil is a punishment, he thought, for original sin; war, the inquisition, and capital punishment are means of expiation.

**Maistre, XAVIER DE** (1763-1852). French writer. Born at Chambéry, a younger brother of

Joseph de Maistre, he served as a youth in the Piedmontese army. In 1799 he went to St. Petersburg, joined the Russian army, became a major-general, and married a Russian lady. He died at St. Petersburg, June 12, 1852. An

essayist of charm, he was a storyteller classed by Sainte-Beuve with Mérimée for the simple direct vigour of his style. His *Voyage autour de ma Chambre*, 1794, and its continuation, *Expédition Nocturne*, 1825, reminiscent of his temporary imprisonment at Turin, were influenced by Sterne. *Les Prisonniers du Caucase*, 1815, narrates personal experiences.

**Maitland.** Name of two places of New South Wales, Australia. East Maitland is a town on the right bank of the Hunter river, 120 m. by rly. N. of Sydney, and is a junction on the main line to Queensland for the North Coast rly. Originally a centre of an agricultural district, it has now largely developed coal production. There are brick and pottery works. West Maitland, 2 m. away, is connected with it by both tram and rly. Pop. of E. and W., 12,350.

**Maitland, SIR FREDERICK LEWIS** (1777-1839). British sailor. Born at Rankellour, Fife, Sept. 7, 1777, he took part in Howe's victory of the First of June, 1794, and was promoted lieutenant of the *Andromeda* in 1795. Two years later he joined St. Vincent's fleet in the Mediterranean, and while in command of the *Kingfisher* helped to capture enemy privateers. He served in the Egyptian expedition, 1801, and on July 15, 1815, when commanding the *Bellerophon*, received the surrender of Napoleon. During 1827-30 he commanded the *Wellington* in the Mediterranean, reaching flag rank in 1830. During 1832-37 he was admiral superintendent of Portsmouth dockyard, and then became commander-in-chief in the E. Indies and China. He died at sea, Nov. 30, 1839.



Sir F. L. Maitland,  
British sailor

After S. Woodward, R.A.  
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**Maitland, FREDERICK WILLIAM** (1850-1906). British historian. Born May 28, 1850, and educated at Eton and Trinity College, Cambridge, Maitland was a well-known scholar in international law, and was called to the bar at Lincoln's Inn in 1876. He devoted his time to the study of law and early institutions, and was soon recognized as perhaps the most original living authority on that subject. In 1884 he was made reader in English law at Cambridge, and four years later Downing professor of laws. His premature death, Dec. 19, 1906, was a severe loss to British scholarship.



F. W. Maitland,  
British historian

His greatest work is found in the *History of English Law*, 1895, written by him and Sir Frederick Pollock, and in *Domesday Book and Beyond*, 1897, which did more than any work of recent years to throw light on English society in the 11th and 12th centuries. He edited eight volumes for the Selden Society, which he helped to found, wrote *Justice and Police*, 1885, and *Township and Borough*, 1898, while his *Canon Law in England*, 1898, upset accepted theories. His lectures on the Constitutional History of England appeared after his death, ed. H. A. L. Fisher, who also wrote Maitland's life, 1910.

**Maitland, WILLIAM** (c. 1528-73). Scottish statesman. He is generally alluded to in history as

secretary Lethington, or as Maitland of Lethington. Having entered the service of the queen regent, Mary of Guise, he conceived a strong suspicion of French intentions regarding Scotland, and became a zealous advocate of an alliance with England. He was appointed secretary to Mary Queen of Scots, and addressed himself to the furtherance of a scheme by which England and Scotland might become united under Mary after the death of Elizabeth. Later he was superseded in Mary's confidence by Rizzio, but after the flight of Bothwell he tried to bring about a marriage between her and



Wm. Maitland,  
Scottish statesman

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Norfolk. When this fell through he once more retired from court, and on his return was imprisoned in Stirling Castle. Later he became the acknowledged leader of the queen's party. Besieged by the English in Edinburgh Castle, he gave himself up, and died in prison at Leith, June 9, 1573.

**Maitreya** (Skt. *mitra*, friend). Future Buddha. Sometimes called the Buddhist Messiah, he is regarded as now living in the Tushita heaven, awaiting his earthly advent 5,000 years after Gautama Buddha attained to nirvana. In Tibet he is portrayed as a colossal bodhisattva, or Buddha elect, arrayed in priestly robes, and jewel-crowned. A lamaist temple in Pekin contains a wood image of the saint 70 ft. high; at Urga, Mongolia, is a gilt image 33 ft. high. In houses and shops his images represent a merry, obese priest, called by foreigners the laughing Buddha. See Buddhism.

**Maiwand, BATTLE OF.** Fought between the British and the Afghans, July 27, 1880. Under Ayub Khan an army of Afghans marched on Kandahar, from which fortress General Burrows with a small force issued to meet them, and attacked them at the village of Maiwand, 50 m. from Kandahar. Deserted by some of his allies, outflanked and seriously outnumbered, Burrows, after a hard fight, was obliged to fall back. His native troops broke in disorder, and the retreat became a rout. The honour of the day rested with the Berkshire Regiment, which covered the retreat and had ten officers and 275 men killed. See Afghan Wars.

**Maize** (*Zea mays*). Cereal, also known as corn, Indian corn, and mealies. One of the two most important cereals in the world, it equals if not surpasses rice in the total quantity of grain produced. A stout annual grass, it is in appearance quite unlike any of the wild or cultivated grasses of the U.K. Male and female inflorescences are separate, the male, called the tassel, being terminal, the female lateral and enclosed by subtending leaves, from between the apices of which the long stigmas, called silks, emerge at flowering time. After fertilisation the female inflorescence produces

the typical ear, which consists of the woody core or cob closely set with paired rows of grain. Maize is naturally cross-fertilised and loses vigour rapidly on self-fertilisation.

Like the potato and tobacco, it is a New World plant and probably originated primarily in Mexico or Central America. Thousands of varieties differ widely in vegetative and grain characters. Plant height may range from 2 ft. to 20 ft., and time between planting and maturity from 60 days to over 10 months. Having this wide variability, maize has proved particularly suitable as a subject for studies in heredity. It is also the first crop in which hybrid vigour has been exploited agriculturally, giving increases in great yield.

The British climate is unsuitable for cultivation of maize as a grain crop, but it is grown to some extent for fodder, the leaves and stems being cut green and fed to livestock or made into silage. Sweet corn, in which the unripe grain is used as a vegetable, is raised in gardens. The grain, poorer in protein than wheat, is a staple foodstuff in tropical countries, and vast quantities are also fed to livestock. Flour is prepared from the milled grain; the coarser grades are termed hominy, and the finer cornflour.

**Majestic.** British steamship. Originally the German liner *Bismarck*, she was taken over by the White Star line after the First Great War. Her displacement was 56,000 tons, length 958 ft., and average speed 23 knots. She was sent in 1946 to shipbreakers in the Firth of Forth. Earlier the name belonged to a British battleship of the First Great War, torpedoed by the German submarine U23 off Gallipoli, May 27, 1915.

**Majesty.** Title of honour. In England it became the official style for the sovereign in the reign of James I, though used earlier, the full form now being His Most Gracious Majesty and The King's Most Excellent Majesty. A king of Spain was styled His Catholic Majesty; of France, Most Christian and Catholic Majesty; of Portugal, Most Faithful Majesty; of Hungary, Apostolic Majesty.

**Majolica.** Name given to two kinds of ware. One is an Italian enamelled ware covered with an



Maize. Left, male flower and leaves; right, cob



opaque tin-enamel glaze which formed the surface for a painted design, and the other is a ware covered with a semi-fluid paste of white or cream colour on which designs were scratched with a point.

True or tin-glazed majolica was first produced successfully by Luca della Robbia about 1440. His enamel was composed of tin, copper, antimony, and other metals, and was fixed by firing in a kiln. His nephew made the process the foundation of a thriving industry. Deruta, near Perugia, was one of the first Italian towns to set up a workshop for majolica, and here, in the 16th century, the art attained its highest degree of excellence in style, design, and colouring. Faenza and Pesaro were other famous centres, and Castel Durante, near Urbino, produced wares finer than those of other factories, in that the clay found in the neighbourhood gave a better earthenware body. Sumptuous majolica was also produced at Urbino, Gubbio, and other towns in N. Italy. Every form of plate, dish, or vase is represented in majolica ware.

Early in the 16th century the lustre colours of Hispano-Moresque were introduced and utilised, especially by Giorgio Andreoli, a great lustre painter of Gubbio. Some of the most famous artists of the Renaissance designed for majolica ware, ornamented as this was with every kind of human and animal forms, Biblical and historical scenes. The form preferred by many connoisseurs is a large simple bowl covered with arabesque scroll work. Majolica is sometimes called *Raffaële* ware, because the designs of Raphael were used continuously from the 15th to the 18th century. Clever reproductions of old pieces fetch good prices, though not the sums paid for fine authentic pieces. See Della Robbia; Pottery.

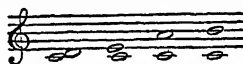
**Major.** In the British Army, officer holding rank next above a captain and below a lieutenant-colonel, and thus the lowest grade of field officer. Majors command squadrons of cavalry, batteries of artillery, companies of infantry, R.E., R.A.S.C., W.R.A.C., etc., and hold grade II staff appointments; the second-in-command of a regiment, battalion, etc., is also a major. Promotion to the rank in peace time is automatic after a period



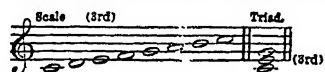
Majolica. Vases and plate of Wedgwood's majolica ware, with paintings by E. Lessore

varying according to the arm but usually 17 years. The president of a district court-martial or field general court-martial is normally a major. The equivalent rank in the Royal Navy is a lieutenant of eight years' seniority, and in the R.A.F. a squadron-leader. The badge of rank is a crown. The rank exists in the American and Italian armies, and existed in the German; in the French army the corresponding rank is commandant, the term major signifying a medical officer.

**Major** (Ital. *maggiore*, greater). Term in music referring to intervals of seconds, thirds, sixths, and sevenths, reckoned in the ordinary scale of their lower notes. Thus:



are major intervals because the notes D, E, A, and B occur in the scale of their lower note (C). The fourth and fifth from the keynote are termed perfect instead of major. The major scale and major triad take their names from their thirds:



Theoretically, there is a difference between the whole tones from 1st to 2nd, and from 2nd to 3rd, degrees of the major scale. C to D, above, is a major tone, D to E a minor tone. Similarly there is a theoretical difference between the size of such semitones as F to F sharp and F sharp to G. This difference is called a comma, but in practice it is ignored.

**Major** OR **MAIR**, JOHN (1469-1550). Scottish scholar. Born at Glegghornie, in West Lothian, he was educated at Haddington, Cambridge, and Paris. He lectured at the Sorbonne and elsewhere in

Paris, where he lived 1493-1518. Returning to Scotland, he lectured in the university of Glasgow, and in 1522 was transferred to St. Andrews. In 1525 he removed to Paris, but returned home in 1531 to become principal of St. Salvator's College, St. Andrews. George Buchanan and John Knox were among his pupils. Major is chiefly known by his history of

Greater Britain, written in Latin and published in 1521. It has been translated into English, with a biography of the author by A. J. G. Mackay, 1892.

**Major Barbara.** Comedy by Bernard Shaw, produced Nov. 28, 1905, at the Court Theatre, London. The hero of the play, a satire on indiscriminate philanthropy, is Undershaft, a great armament manufacturer, who, denouncing poverty as the worst of crimes, is responsible for the retirement of his daughter Barbara from the Salvation Army. In the original production the title rôle was played by Annie Russell; most noteworthy of actresses in revivals were Sybil Thorndike and Catherine Lacey, while Wendy Hiller played in the film version, 1941.

**Majorca** (Sp. *Mallorca*). Island in the Mediterranean Sea, belonging to Spain. Situated 115 m. S.S.E. of Barcelona, it is the largest of the Balearic Isles, being 60 m. in length by about 48 m. wide, with an area of 1,325 sq. m. The coast line is indented with many bays and harbours, and the surface is mountainous, a range of mts. running along the N.W., the culminating point being Puig Mayor, with an alt. of about 5,000 ft. The soil is fertile and the climate usually temperate. The island is generally well watered, and produces wine, oil, cereals, figs, oranges, and other fruits in abundance. There are many mineral and saline springs. Coal, iron, and cinnabar are mined, marble and slate are quarried, the marble of Santany being celebrated, while a number of semi-precious stones, including jasper, serpentine, agate, alabaster, and rock crystal are found.

Of the many stalactite caves, among the finest in Europe, the Cueva del Drach and the Cueva



Major. Badge of rank on shoulder strap

de Artá are the most remarkable. The most typical industry is the making of glazed pottery, especially majolica. Brandy is distilled, and silk is manufactured to a limited extent. Sheep, mules, pigs, and poultry are reared. There are about 50 m. of rly., linking Palma, the capital, with Manacor, Inca, La Puebla, Alcudia, and Felanitx. Many of the Spanish nobility have palaces in Majorca. At Miramar is the beautiful seat of the Archduke Ludwig of Salvator; at Valdemosa, George Sand wrote her *Spiridon* in 1838. The Albufera Morass, 5,000 acres in extent, in the N.E. of the island, was drained by a London company in 1865-70. The island was peopled by Moors when conquered by Jaime of Aragon, towards the close of the 13th century, and in 1343 it was taken over by Aragon. In the civil war, 1936-39, Franco's forces had a naval base at Palma. Pop. 272,450. See Balearic Isles.

**Major-General.** In the British army the lowest grade of general officer; and highest rank (replacing chief controller, 1950) in the W.R.A.C. A maj.-gen. commands a division; the chief of staff, deputy adjutant - general, deputy quarter-master-general, etc., of an army or equivalent h.q. also hold maj.-gen.'s rank. Promotion is by selection. The badge of rank is a crossed sword and baton, with a star above, worn on the shoulder-strap; red gorget-patches with a line of gold oak-leaves are worn on the collar, and the cap has a red band. The cap-badge is the crossed sword and baton surmounted by a lion and a crown and surrounded by a wreath of laurel. Oak-leaves on the peak of the cap were abolished during the Second Great War. The equivalent rank is rear-admiral in the Royal Navy and air vice-marshal in the Royal Air Force. The rank exists in the American, and existed in the German, army; the corresponding rank in the French army is *général de division*.

Major-general was the name given by Oliver Cromwell to the officers in command of the twelve administrative districts into which he divided England for his system of government by military police, established Oct., 1655.

**Majorian.** Roman emperor of the West, A.D. 457-461, whose full name was Julius Valerius Majorianus. Though owing his elevation to the barbarian Ricimer, Majorian was a sound ruler, being the author of measures for the relief of his subjects from the taxation by which they were sorely oppressed. He also passed laws for the protection of ancient monuments, the use of which for building material had become common. A great fleet which he sent against the Vandals was destroyed by them at Carthago Nova, whereupon he made peace. Majorian, owing to the jealousy of Ricimer, was forced to abdicate, and died five days later.

**Majority** (Lat. *major*, greater). Term used in several senses. The idea of the majority is at the root of representative institutions in Great Britain and the U.S.A., in which countries, with some exceptions, the receipt of a majority of votes cast means election, whether of one or of thousands. Similarly the votes of the majority, whether large or small, decide questions of legislation: for instance, the Act of Settlement, 1701, was passed by a majority of one. From politics the idea passed into business, differences of opinion about the conduct of public companies being usually decided by a majority, either of directors or of shareholders.

A majority is of three kinds. It may be, as in elections in the U.K., a majority over the next candidate, but not necessarily a majority of the votes cast; it may be a majority of the total votes cast; or, as is required in some cases, of all who are entitled to vote. The president of the U.S.A. requires a majority of the last kind for election. To avoid the results which follow from the first method, by which a candidate who receives only a minority of the total votes may secure election, electoral devices have been adopted, chief among them being proportional representation, introduced *e.g.* in the Netherlands by an electoral reform act of 1917. Sometimes a bare majority is insufficient—*e.g.* for acceptance of foreign treaties by the U.S. Congress a two-thirds majority is required. Similarly, in the assembly of the United Nations, a two-thirds majority is necessary, the effect of this being

sometimes to prevent action, even though a majority in favour of a particular course of action may exist. (See Proportional Representation; Representation; Second Ballot; Vote.) For details as to majority verdicts by juries, see under Jury.

To attain one's majority is to cease being a minor and to reach the full status of manhood. It is usually fixed at 21 years of age, but is sometimes 18 or lower. To obtain a majority is to reach the rank of major. To pass over to the majority, used euphemistically of death, is a phrase dating back to the days of Greece and Rome, and the great majority is also frequently used for the dead.

**Majuba Hill.** Eminence in Natal, at the N.E. end of the Drakensberg range. Its height is 7,000 feet. During the war between the British and the Boers in 1880-81, Sir G. Colley, in command of the former, decided to seize the hill. He took with him 500 men, and on the night of Feb. 27, 1881, the summit was reached and occupied. In the early morning, however, the tired

men were attacked by the Boers, who, after some hours of desultory firing, got to the summit and drove down the British. Colley was killed and about half his force lost. See South Africa.

**Majunga** OR **MOJANGA.** Province and town of Madagascar. The town is 230 m. N.W. of Antananarivo, on the N.W. coast at the mouth of the Ikopa river. It has some trade, especially in rubber from the neighbouring district, and there are meat preserving factories. Pop. 23,684.

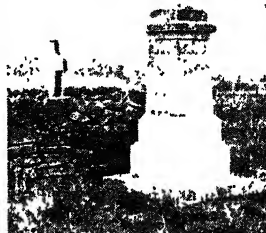
**Makalla, MOKALLA, OR MUKALLA.** Chief harbour of the Hadhramaut, S. Arabia. It lies about 300 m. E. of Aden.

**Makaroff, STEPHAN OSSIPOVICH** (1848-1904). Russian sailor. Born at Kiev, he entered the navy



Stephan Makaroff,  
Russian sailor

as a boy and saw service in the war with Turkey, 1877-78. With intervals he was employed in hydrographic surveys during 1881-96, and in 1901 he made an Arctic ex-



Majuba Hill. Monuments to the fallen erected on the battlefield

pedition. Governor of Kronstadt, 1899-1904, on the declaration of war with Japan in the latter year he was given command of the Far Eastern fleet. He went down with his flagship, the Petropavlovsk, sunk by a mine off Port Arthur, April 13, 1904.

**Makart, HANS** (1840-84). Austrian painter. Born at Salzburg, May 28, 1840, he studied painting at Vienna and Munich. In 1869 the emperor Francis Joseph invited him to Vienna and in 1879 he designed a large allegory called Progress, in honour of the emperor. That year he became professor of historical painting at Vienna academy. He also decorated the Vienna museum of art. He died in Vienna, Oct. 3, 1884.

**Make-up.** Term for the application of powder, rouge, etc., to the face, neck, and hands by women. Between the First and Second Great Wars, social habits altered completely in the matter of make-up. Off the stage, this was previously not used overtly by respectable women except for a slight dusting of face-powder or a colourless nail-polish; moreover, such make-up was always "naturalistic"—intended to be taken for natural beauty. After about 1920 make-up came to be used by the majority of women, young and old, in nearly all classes. The cosmetic trade expanded enormously, while chemical research added new ingredients to the preparations available.

This revival of the ancient art of painting the face was accompanied by an almost equally ancient disregard for the actual appearance of the face under treatment. Instead of touching-up the face she had, a woman tried to paint on to her own the face she wished she had. If she admired the sophisticated, the Cleopatra, or the Juliet, the *femme fatale* or the sweet-Dolly-Daydream type, she strove to impose this upon her own features, which were sometimes intractably of a different nature.

This cult of beauty raised the general level of appearance, turned a good trade into a money-making industry, and proved health-giving in so far as it demanded personal hygiene of a sort once practised almost exclusively by the leisured classes, e.g. care and cleanliness of the skin, the hands, and the teeth.

The list of cosmetics which a woman who has the time and money can use is long and lengthens every day. Its cost varies, not so much because of the price of the ingredients, since even

good ingredients are not very expensive (though some perfumes used in cosmetics are), but because firms catering for luxury-loving clients put their products into expensive containers of china, glass, and quartz.

The purpose of the practice of make-up is an object of interest to moralist, philosopher, and sociologist. Whatever its basic purpose—probably the attraction of man—it reached in the 1940s a pitch at which it became virtually compulsory, women of all classes, from factory and office workers to those in society, being as reluctant to appear in public without their customary make-up as with unwashed hands or untidy dress.

One woman may use only powder and lipstick (or a variety of lipsticks each chosen to go with a particular costume, for indoor or outdoor wear, or to suit the degree of lighting expected). Another for her eye make-up alone may use several pots, brushes, and bottles; for her skin vanishing cream, foundation lotion, several shades of powder; and a range of colours in nail-varnish. "Vanity" cases, once the size of a cigarette-case, became much larger containers which were miracles of compression much indebted to plastics for their many little pots and phials. These cases might be neat and workmanlike or glittering and jewelled. Where the handbag of an older generation had a pocket for powder-box and lipstick, the luxurious vanity-case of the mid-twentieth century included a small space for money and latchkey.

Theatrical make-up is a specialised form, in which grease paints of various tints and powder are used to correct the effect of stage lighting or to conform to the age and appearance of the character an actor is representing. There are "straight" make-ups and "character" make-ups, and the latter may require the use of wig, crepe hair, nose putty, water dyes, etc. Make-up for the film or television camera is even more specialised, the strong lighting demanding a flattening or deadening of the natural colouring of the face in order to avoid any appearance of discoloration or unpleasant greasiness in the photographic image.

**H. Pearl Adam**

**Makhach Kala.** Seaport of the U.S.S.R. Capital of Daghestan A.S.S.R., it lies on the W. shore of the Caspian Sea, about 100 m. E. by S. of Grozny, on the Azov-Baku rly. There is an oil pipe-line between the port and Grozny, and

the oilfields provide the main employment for a pop. of 86,847.

**Making-up Trade.** Term used in two significations: the process of making up various cloths and materials into clothing; and the making up of large quantities of cloths, etc., into bundles of more convenient size for dispatch to the wholesalers in the textile trades.

The principal branches of the making-up trade concern tailoring, millinery, and dressmaking. Millinery and dressmaking, although together with mantle making they are sometimes carried on by the same employer, are distinct trades. They have similar conditions of labour, and are united by the bond of union in trades of dress, that is, the sewing-machine.

The making up of large quantities of cloths, etc., into convenient bundles for distribution to the wholesale trade in the U.K. is mainly confined to the manufacturing districts of Manchester, Leeds, Bradford, and parts of Scotland. The cloth is wound on to small boards, cartons, blocks, or cards, and is delivered in flat or round packages.

**Mako.** A town of Hungary, in Csanad co. It is situated near the Maros river, close to the Rumanian frontier, and is 17 m. by rly. S.E. of Hodmező-Vásárhely, and 19 m. E. of Szeged, with which it is joined by road and rly. Pop. est. 35,000.

**Makololo.** Section of the Basuto branch of the S. Bantu peoples in S. Africa. About 1823, under Sebituana, they trekked from the Vaal headwaters across the Kalahari and Bechuanaland, reaching the Zambezi about 1835. Driven N. by the Matabele, they subdued the Barotse, and imposed upon them their Sesuto speech. The Barotse virtually extinguished them in 1865. A party who accompanied Livingstone coastwards returned to the right Shiré bank, where two Makololo chiefs founded short-lived states. Themselves extinct, their speech is still the *lingua franca* of the upper Zambezi basin.

**Makran.** S. portion of the state of Kalat, Baluchistan, Pakistan, lying on the Arabian sea coast. The rivers, usually dry, are occasionally flooded, and the subsequent pools yield irrigation water. Fogs are frequent and mosquitoes abound. The chief crops are dates, the principal groves being at Panjgur and Keoh. Most of the people are Jats. When the boundary of Baluchistan was delimited, the W. of Makran was included in Persia Area, 23,269 sq. m.

**Makua.** Negroid tribes of the N. coastlands of Mozambique. Aboriginal clan-groups, allied to the Yao, they retain their racial and cultural characters unspoiled by Arab and Indian contact. Their main Bantu language—also called Moçambique or Tugulu—is spoken S. of the Lurio river. The N. Makua dialect extends to Rovuma river; W. Makua or Lomwe ranges to the Lujende valley. See Bantu; Negro.

**Mal** or **Malē.** Aboriginal tribe of cultivators in Madras, Hyderabad, and Bengal. Numbering over 2,000,000, they are short, dark, sturdy hillmen, whose customs have been veneered with Hinduism. Some are employed as village watchmen. In 1770 the British encountered them as predatory freebooters raiding from the foothills to the Ganges, and recruited from them a corps which became the Bhagalpur Rangers.

**Malabar.** Division of Madras state, India. It forms the portion of the Malabar coast strip N. of Cochin, S.W. of Coorg, and S. of S. Kanara. It lies W. of the Palghat gap. Only a third of the total area is cultivated. The rainfall averages 116 ins. annually. Rice is the only food grain, the other crops being coconuts, rubber, etc. There is a rly. from Madras to Calicut, which is the largest town, and up the coast to Mangalore. In 1922 the two Malabar states of Travancore and Cochin were transferred to control of the govt. of India. Area, 5,790 sq. m. Pop. 3,929,425. *Consult* Malabar and the Portuguese, K. M. Panikkar, 1930.

**Malabar Coast.** Southern half of the W. coast strip of the Deccan, India. It has an average width of 40 m., and lies between the seashore and the hills which are the scarped face of the Deccan tableland. The Malabar coast is in Madras, and is the S. continuation of the Konkan coast of Bombay; it is reached from the E. through the Palghat gap. The rivers are short, the soil is alluvial, and the rainfall heavy, so that two or three crops of food grains are obtained. There has been a great increase in the production of cultivated rubber and copra. The coast is fringed by a series of connected lagoons.

**Malacca.** A territory of the Federation of Malaya. The terr. is bounded N. by Nigri Sembilan and E. by Johore, and extends for 42 m. along the strait of Malacca N.W. of Singapore. It has a pop. of 236,087, and an area of 640 sq. m. Its capital, Malacca (pop. 45,010) is situated on the Malacca river, 154 m. N.W. of Singapore, with

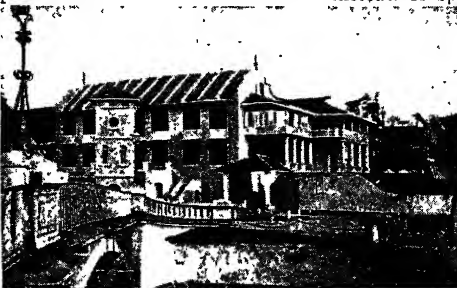
which it has rly. connexion, as also with Tampin in Nigri Sembilan. It was captured by the Portuguese in 1511, by the Dutch in 1641, and by the British in 1795. Temporarily restored to Holland in 1818, it became a British possession in 1825 by exchange for Bencoolen in Sumatra. Malacca was formerly an independent country of S.E. Asia. It consisted of a long, narrow strip of land stretching S. from Siam. See Malaya, Fed. of.

**Malacca Bean** (*Semecarpus anacardium*). Alternative name for the Marking Nut Tree (*q.v.*).

**Malacca Strait.** Channel between the Malay Peninsula and the island of Sumatra, connecting the Indian Ocean with the China Sea. About 500 m. in length, it varies in width from 30 m. to 195 m. Both shores are low-lying and swampy.

**Malachi.** Minor prophet. Generally accepted as the author of the last book of the O.T., he may possibly have been a contemporary of Ezra and Nehemiah; but the name is in form identical with the Hebrew for "my messenger," and it may be a contraction of Malachijah, messenger of Jah. The writer deprecates the degeneracy of the priesthood and the general falling-off in religious observance, urges repentance, and declares that the Day of Judgement will come suddenly. He deals with the prosperity of the ungodly, and foretells the coming of another Elijah (John the Baptist) to prepare the way for the Messiah.

**Malachite** (Gr. *malachē*, malow). Bright green copper ore used to some extent as an ornamental material. Its colour is due to the presence of a basic carbonate of copper. The main deposits are in the copper mines of the Belgian Congo, the Urals, and in the S.W. of copper areas in the U.S.A. Smaller deposits occur in Cornwall, where copper minerals are present. Malachite has been used as a pigment, although it is highly poisonous.



Malacca, Federation of Malaya. The old Stadthouse, dating from the time when the town belonged to Holland

**Malachite Green.** Aniline dye prepared by the action of benzaldehyde upon dimethylaniline in the presence of hydrochloric acid or other condensing agent, and oxidation of the product, tetra-methyldiamidodiphenyl-methane. First described by Foster in 1877, it is used for dyeing and printing wool, cotton, silk, and artificial silk, being much faster on rayon than on natural fibres. It is also used for dyeing leather, straw, etc., and for coating paper.

**Malachy** or **MAELMAEDHOIGUA MORGAIR** (c. 1094-1148). Irish saint. Born in Armagh, he entered the monastery founded by Iomhar Ua-h-Aedhagan. Ordained priest in 1120, he became assistant to Bishop Kellach or Celsus; abbot of Bangor, co. Down; and bishop of Connor, 1124. He established the monastery of Ibrach; was archbishop of Armagh, 1132-36; and bishop of Down. Venerated for his sanctity and learning, he was appointed papal legate by Innocent II. He died and was buried at Clairvaux while on his way to Rome, Nov. 2, 1148. His life was written by S. Bernard. He was canonised by Clement III in 1190 and is commemorated on Nov. 3. Another Malachy, of Ireland, a Franciscan, flourished c. 1310, and another (Malachy Macaeth) was bishop of Elphin, 1307-12, and archbishop of Tuam, 1312-48.

**Malacology** (Gr. *malakos*, soft; *logos*, science). Branch of zoology which deals with the mollusca. Whereas conchology deals chiefly with the form and design of the molluscan shell, malacology is concerned with the anatomy of the entire animal upon which modern classification of the molluscs is based. Details of the nature of the radula, reproductive organs, and gills are particularly important. See Conchology; Mollusca.

**Malacopterygii.** Name given to a group of fishes which have the dorsal fin supported by soft rays instead of spines. The cod is a typical example.

**Malacostraca** (Gr. *malakos*, soft; *ostrakon*, shell). Sub-class of Crustacea, including all the more highly organized forms. The name is somewhat misleading to the student who considers its derivation, since this sub-class includes the hard carapace of the

crabs and lobsters, as well as the thin plates of the shrimps and wood-lice; but it was given originally as a comparative term, to distinguish the exoskeleton of these animals from the shell of the Mollusca. The body consists of twenty segments or somites, of which six compose the head, eight the thorax, and six the abdomen, segments 2 to 20 inclusive bearing a pair of many-jointed appendages, which are variously modified into antennae, jaws, walking legs, and swimming organs, according to their location. The larvae leave the egg in the zösea stage of development. The sub-class includes five divisions—Phyllocarida, Syncarida, Pterocarida, Hoplocarida, and Eucarida. See Crustacea.

**Malade Imaginaire, LE** (The Imaginary Invalid). Molière's last comedy, produced at the Palais-Royal, Paris, Feb. 10, 1673. The central character, Argan, a selfish hypochondriac, originally acted by the author, wishes his elder daughter to marry a doctor, so that he may always have one at hand. Acting, however, on his brother's advice, he pretends to be dead, discovers the designing hypocrisy of his second wife, and the devotion of his daughter, and consents to the daughter's marriage to her lover if the lover will become a doctor. The brother again comes to the rescue by persuading Argan to become a doctor himself, and the comedy ends with the burlesque ceremony of Argan's admission to the degree of M.D. The 17th cent. medical man is severely caricatured. For the ballet scenes the music was written by Charpentier.

**Maladetta** (Sp., cursed). Central and loftiest section of the Pyrenees. The range trends S. from the main chain, into the prov. of Huesca. Mt. Aneto, or Pic de Néthou, has an alt. of 11,168 ft. See Pyrenees.

**Málaga.** Maritime prov. of S. Spain. It is bounded N. by Córdoba and Seville, W. by Cadiz, E. by Granada, and S. by the Mediterranean, its coast-line being broken by the Bay of Málaga. Agriculture is the principal pursuit. The chief products are wine, oil, wheat, grapes, raisins, oranges, lemons, almonds, figs, esparto, sugar-beet, and cane. It contains much mineral wealth, including iron and lead, and there are numerous mineral springs. Scattered throughout the prov. are numerous flour-mills, distilleries, wine-presses, and oil factories.



Málaga, Spain. Panoramic view of the city; the cathedral, begun about 1528, was completed to its present state in the 18th century

Owing to the hilly nature of the province, transit is difficult. The coastal fisheries are important. Area, 2,813 sq. m. Pop. 715,674.

**Málaga.** Seaport and watering-place of Spain, capital of the prov. of Málaga. The ancient Malaca,



Málaga town arms

it stands at the mouth of the Guadalmedina river, 65 m. N.E. of Gibraltar, and 120 m. by rly. S. of Córdoba. Protected by hills, it has an excellent climate, making it comparable to the Riviera. Dominated by a ruined Moorish citadel, and the 13th century castle of Gibralfaro, the old town is crowded, its streets being narrow and the houses lofty; but the new suburbs are well built, and stretch into the surrounding country cultivated with vineyards and gardens. The Paseo de la Alameda is one of the finest thoroughfares.

The harbour of Málaga is deep and commodious, with several moles, and in it ships are protected from all winds. The river alternates from a dry watercourse to a swollen torrent. There are a cathedral (unfinished) with a lofty spire, an episcopal palace, opera house, bull ring, and hospitals, besides a park, pleasant promenades, and an English cemetery. Málaga is noted for its wine, which is largely exported. Other exports include raisins, olive oil, almonds, fruit, sugar, palmetto hats, bird seed, iron, and lead. Manufactures include pottery, mosaics, chocolate, chemicals, spirits, cotton, linen, and lithographed work. Founded probably by the Phoenicians, Málaga became important under the Romans and later under the Moors. From the latter it was wrested by the Christians in 1487. Pop. 238,857.

In the Spanish Civil War, Málaga, which had been an important Republican stronghold, was captured by the Nationalists on Feb. 8, 1937. Its fall ended the winter deadlock between the two sides. The Nationalist assault was made irresistible by Italian and German help in aircraft and men on a new and greater scale.

**Malagasy.** The name popularly denoting the indigenous population of Madagascar. Numbering over 3,000,000, they represent ancient negroid settlements subsequently dominated by immigrations, extending over 2,000 years, of Indonesian bands coming from S.E. Asia, primarily in outrigger canoes with mat sails. Pre-Mahomedan Hinnyars from Arabia exerted political and cultural influence upon them, as did settlers from India.

Thus the tall, dark, frizzy-haired, long-headed Sakalava of the W. slope are distinguished from the chestnut-hued, crisp-haired Betsimisaraka of the E. coast, derived from the earlier pastoral Arab immigrations, and from the short, olive, straight-haired, round-headed Hova of the central highlands, whose aspect is almost Javanese. The prevalent Austronesian speech, introduced before Malay was affected by Sanskrit, and the Oriental culture, such as oblong pile-houses, vegetable clothing, blowguns, dug-outs, outrigger canoes, Asiatic bellows, terrace-cultivation of rice, taboo customs—locally called *fadi*—infanticide, and the like, suggests that the original negroid elements emanated from sea-going Melanesians and not from Bantu Africa. Swahili slave-dhows introduced more recently an African negro strain. See Madagascar.

**Malakand.** Pass in the N.W. Frontier Province, Pakistan. It leads from the valley of the Kabul



river to that of the Swat. A branch rly. runs from Naushahra (Nowshera) on the Kabul and on the Peshawar rly. to Dargai at the foot of the pass. In 1897 the Swats made a fierce attack on the British post at Malakand. In the ensuing successful operations of the Malakand field force, Winston Churchill, served as war correspondent for *The Pioneer*.

**Malakoff** OR **MALAKOV**. A fort of Sevastopol, taken by the French in the Crimean War, Sept. 8, 1855. The batteries were stormed with such fury that in three minutes the French won the fort. Gen. Pélissier, their commander-in-chief, was made duke of Malakoff. The action is commemorated by a vast triptych at Versailles.

**Malan**, ADOLPH GYSBERT (b.1910). S. African airman. Born at Wellington, S. Africa, he was the son of William Adolph Malan. Educated in S. Africa, after service with the Union Castle S.S. co., he joined the R.A.F., 1936, becoming a fighter pilot. In 1940 he won the D.F.C. at Dunkirk and, while serving in Fighter Command in the Battle of Britain, the D.S.O. Later he was awarded bars to both. He commanded Biggin Hill Fighter station, 1943, and a T.A.F. wing, 1944. A member of the staff of the R.A.F. staff college 1945-46, "Sailor" Malan retired 1946 with the rank of group captain.

**Malan**, DANIEL FRANÇOIS (b. 1874). S. African politician. Born at Riebeeck W., Cape prov., May 22, 1874, he went to Stellenbosch and the univ. of Utrecht, Holland, became a minister of the Dutch Reformed Church, and entered the Union parl. 1917 as member for Cape prov. Minister of the interior, public health, and education in the Nationalist govt. of 1924, he resigned 1933, and led the Herenigde (Nationalist Republican) party against the Smuts-Hertzog coalition.

Malan moved in the house of assembly, Jan. 12, 1942, that the Union should withdraw from the Second Great War and separate from the British crown. He was exonerated, 1947, by a select committee from charges of dealing with German agents during the war. In the 1948 election his party won 70 seats against the 65 of Smuts's party, and Malan became prime minister. See South Africa.

**Malaprop**, Mrs. Character in Sheridan's comedy, *The Rivals*, who is remarkable for her misapplication of big words. She illustrates her weakness thus: "Sure, if I reprehend anything

in this world, it is the use of my oracular tongue and a nice derangement of epitaphs." This form of humour had been employed by earlier writers (Shakespeare's Dogberry; Fielding's Mrs. Slip-slop; Smollett's Tabitha Bramble), but Mrs. Malaprop stands as the typical misuser of words, and her name, coined from the French *mal à propos*, meaning the reverse of well said, is the origin of malapropism, i.e., a word misapplied.

**Malapterurus**. Genus of African catfish. They are remarkable for their powers of giving an electric shock. *M. electricus*, found in the Nile, reaches a length of 4 ft. See Electric Fish.

## MALARIA: ITS CAUSE AND PREVENTION

Sir Philip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P., Consulting Physician to the Hospital for Tropical Diseases, London

*An account by a world-famous authority of the discovery of the cause of malaria, a disease that has sapped the vitality of millions of human beings; of remedies; and of ways to prevent it*

Malaria (Ital. *mala aria*, bad air) is a common term for a group of fevers of man caused by parasites which inhabit and multiply in the red blood corpuscles. Formerly it was known by many other names such as ague, marsh fever, remittent fever, etc.

In 1880 Laveran discovered the parasite of malaria, which was named plasmodium, and in 1894 Patrick Manson enunciated his mosquito-malaria hypothesis, which paved the way for the final discovery by Ronald Ross in 1898 that if a certain species of mosquito be fed on the blood of birds infected with a blood parasite, closely resembling that of the malaria organism of man, the plasmodium, after passing through various stages in the stomach wall of the insect, could be transmitted to other birds by the bite of that mosquito. This discovery was confirmed in man shortly afterwards with the human parasite by Grassi in Rome, and subsequently by Bignami and Marchiafava. Almost equally important, only one genus of mosquito, termed *Anopheles* by Grassi, could subserve this particular function, though why this should be so has not been determined. Experiments undertaken in 1900 at Ostia, one of the most malarious localities in the Roman Campagna, at Manson's instigation, confirmed the mosquito-malaria hypothesis: for three most malarious autumn months of that year, Drs. Low and Sambon, together with Signor Terzi, and their servants, lived in a specially constructed hut, the doors and windows of which were

protected against mosquitoes by wire gauze. During the daytime they roamed freely about the neighbourhood. They observed no precautions against malaria beyond retiring to their hut from sunset to sunrise. Although their immediate neighbours, the Italian peasants, were stricken with malaria, their use of the mosquito-proof hut at night afforded complete immunity from this fever to its occupants.

Shortly afterwards the reverse of this historic experiment, also devised by Manson, was carried out in London. *Anopheles* mosquitoes, infected with malaria after having fed on suitable patients in Rome, were dispatched in a specially constructed cage to London, and were then made to bite two volunteers, one of whom was Manson's son, Patrick Thurburn; after a period of ten days both volunteers developed malaria and the parasites were demonstrated in their blood. Since that time research work on malaria parasites and mosquitoes all over the world has established that out of over 250 known species of *Anopheles* some 64 are capable, under suitable climatic and environmental conditions, of transmitting malaria.

The geographic distribution of malaria is, therefore, governed by conditions favourable to the development of large numbers of mosquitoes capable of carrying the malaria parasite. (Each species of mosquito has its special habitat, special feeding habits, and special breeding places.) It is also governed by the presence of human beings infected with the malaria



parasite at the right stage of its development: for instance, in villages subject to malaria infected children are more dangerous than adults. The malaria parasite requires a high average temp. (over 60° F.) and high humidity for its development inside the mosquito. Therefore, as a general rule, malaria is most prevalent in the region of the equator, where these conditions most generally prevail, and gradually diminishes N. and S. towards the Arctic and Antarctic.

#### Distribution and Causes

The distribution of malaria has altered in the course of years. In some places advancing civilization has caused it to die out, as in parts of N. America, in most of N. Europe, and in England. Formerly tertian and quartan fevers were not uncommon in E. and S. England, but, although a certain number of benign tertian malaria cases originated after the First and Second Great Wars in the S.E. (Kentish marshes and I. of Grain), yet England as a whole has become singularly free of it. It occurs to the edge of the Arctic Circle, in Sweden and Finland, and in N. Russia (Archangel, 65° N.) where some British troops became infected in 1919. It is widely distributed in Central and S. Europe, Africa, Asia, New Guinea and Micronesia, Central and S. America. In the W. Indies, too, it is common, with the exception of Barbados (where it was introduced in 1927, but was immediately stamped out). The islands of the W. and S. Pacific are free of it as there are no anopheles mosquitoes there, and so was Mauritius until it was introduced in the middle of the 19th cent. Malaria is still common in southern U.S.A., and in Canada a focus exists on the N. shore of Lake Ontario (42° N.).

Malaria in man is now known to be caused by the entry into the blood of any of the following four species of parasite: *Plasmodium vivax* (benign tertian), *P. malariae* (quartan), *P. falciparum* (malignant or subtertian), and *P. ovale* (oval tertian). Each of these parasites has a life-cycle and periodicity which are responsible for a distinctive type of fever; for instance, the life-cycle of *P. vivax* and *P. ovale* in the blood occupies 48 hours and produces a tertian fever, or attacks, on alternate days: that of *P. falciparum* occupies about the same time and produces a subtertian type of fever; that of *P. malariae* produces a quartan periodicity with fever every fourth day.

Of these fevers, the subtertian, confined to the hottest and most humid districts, is found in S. Europe (S. Italy, Sicily, Greece), W., Central, and E. Africa, S. India, Malaya, S. China, New Guinea, Central and S. America. It has not the same precise and definite periodicity as the other three, but produces febrile attacks of great severity which vary greatly in length and in virulence. It may produce alarming complications: when the parasites multiply inside the vessels of the brain it causes coma or cerebral malaria. Sometimes the abdominal vessels are affected, when symptoms resembling severe dysentery or cholera are evoked; and in certain circumstances it is the cause of the dreaded and fatal blackwater fever. The underlying pathology of this malignant type is due to the method of development of the parasite, which evokes a stickiness of the red blood corpuscles in which it lives, causing them to agglomerate and clump together, thus impeding or actually blocking the blood flow.

The character of any one of these fevers may be modified or altered by the maturing in the blood at different periods of two broods of a particular parasite, or by infection of the individual with two or even three different species of parasite at the same time. These parasites tend to have a somewhat different geographical distribution. The benign tertian is world-wide; ovale tertian appears to be confined to Africa, mainly to the West Coast; quartan has a local and patchy distribution, being found mainly in Malaya and Ceylon, though it also occurs in the W. Indies, and in S. and Central America.

#### Characteristics and Duration

An attack of malaria is characterized by a shivering fit, or rigor, soon succeeded by the hot and the sweating stages. Vomiting, often bile-stained, is frequent. In the first stage, the patient shivers with a sensation of cold water being poured down the back, the teeth chatter, and he piles on clothing for warmth; in the second, the shivering ceases and the patient becomes flushed, hot, and dry with intense headache and bone pains; the third or sweating phase is accompanied by the most profuse perspiration and a sense of great relief. The interval which occurs between two attacks varies with each infection.

The duration of malaria is very variable. In the benign tertian

the latent period between two attacks may be as much as a year, and it is reckoned that the parasite may persist in the blood for three years after one inoculation. The quartan is by far the longest-lived and may persist for as long as 21 years. On the other hand, the dreaded subtertian dies out usually within a few months. Ovale tertian produces a very mild, evanescent form of fever.

In the quiescent intervals between the attacks the parasite develops slowly within the blood corpuscles somewhere in the circulation, but where has not been accurately determined. Some think that a different form of development takes place within the lining cells of the capillary vessels. However, when an attack does occur the parasites appear in the blood stream in swarms; Ross estimated that some 150 million are necessary to provoke an ague fit. The actual rigor corresponds to the stage when the parasites have sporulated inside the blood corpuscles to the extent that they disrupt them, thus setting the spores free in the blood serum. As each infected corpuscle is disintegrated and the poisons thereby liberated destroy a great many more, malaria produces serious anaemia. As the malaria parasites live mostly within the blood vessels of the spleen, marked enlargement of this organ is usual.

#### Combating the Disease

Prevention of malaria depends on the elimination, as far as possible, of the breeding places of that particular species of anopheles mosquito which carries the infection in each particular locality. This involves a close study of the life history and breeding habits of every species of anopheles: some breed in brackish water, others in fresh, some in placid pools, others in running brooks, some seek shade, others light, and so on. It entails draining of swamps, banking of streams, screening of wells, filling in of pools sometimes the building of sea walls and locks to keep out seawater, etc., and the use of larvicides, especially D.D.T., the most potent insecticide known which destroys both larvae and mosquitoes. The oiling of pools and other collections of water with paraffin or crude petroleum is much practised. The removal of plants and water weeds on which anopheles larvae feed and in which they hide is important. The use of mosquito nets round the sleeping couch at night has become universal in districts subject to malaria;

the spraying of these nets with a solution of 5 p.c. D.D.T. enhances their efficacy. The introduction of larvivorous fish which feed on mosquito larvae has been followed in many places by excellent results. In the W. Indies and S. America "millions" (*Cerardinus poeciloides*) have been employed. Many countries possess fish equally efficacious. The top minnow, *Gambusia affinis*, has been introduced into S. Italy and many other countries with favourable results. In S. India and Java a species (*Puntius javanicus*) feeds on water plants, thus depriving mosquito larvae of their food-supply.

For 300 years and more quinine has been the specific drug against malaria. It acts more quickly and with more certainty than any other drug, and is therefore much the most useful against the subtertian form in the acute stage. There is however, some reason to believe that it may precipitate blackwater fever. Atebrin or mepacrine, introduced by Kikuth in 1930, is a yellow dye which rapidly destroys the parasite, especially the subtertian. It has the disadvantage that it stains the skin yellow, but it has proved a potent drug in preventing malaria, especially under war conditions. During the Second Great War troops in the field took one tablet (1½ gr.) daily for six days in the week; undoubtedly this precaution greatly reduced the incidence of malaria, and may almost be said to have won the war in India, Burma, and the Far East. Paludrine, a later discovery, is possibly even more remarkable. The dose is one tablet (1½ gr.) three times daily during a malarial attack. It is very effective in subtertian malaria and has the great advantage of being virtually non-poisonous. As a prophylactic, the dose is one tablet a day during residence in a malarious country. As prophylactics, both atebrin and paludrine should be taken for at least 10 days before exposure to possible infection. Consult Malarial Fever, its Cause, Prevention, and Treatment, R. Ross, 1902; Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases, R. P. Strong, 7th ed., 1944; Tropical Diseases, P. Manson, 12th ed., ed. P. Manson-Bahr, 1945.

**Malaspina.** Glacier in Alaska. At the base of Mt. S. Elias, it has a sea front of 70 m., and an area of 1,500 sq. m., and is a glacial plateau fed by numerous large valley glaciers. The front is low, but rises inland to 2,000 ft.; the

surface is generally level, with crevasses near the mountain margin. Glaciers break away from the W. edge; elsewhere large and small streams issue from ice caves and discharge coarse silt which builds the land seawards.

**Malatesta.** Italian princely family. The parent stock of the Malatesta settled in Rimini in 1216,



S. Malatesta,  
Italian soldier

Giovanni being podestà of that city in 1237, and Malatesta di Verocchio assuming the supreme power in 1295. Giovanni, brother of the latter, was husband of Francesca da Rimini, whose love story is told in Dante's *Inferno*. The family were ardent Guelph partisans and during the Renaissance rose to considerable power. Sigismondo (d. 1468), son-in-law of Francesco Sforza, was a noted patron of the arts and a capable general, fighting as a mercenary in the armies of Venice, Naples, and Florence, and making war on Pope Pius II, who excommunicated him in 1460. Pandolfo IV sold Rimini to the Venetians in 1503.

**Malatya.** A town of Asiatic Turkey. Situated about 115 m. N.W. of Diarbekir, on a plateau, alt. 3,000 ft., it is an important centre of trade in the upper course of the Euphrates, a great road junction, and served by rly. It lies among beautiful vineyards and orchards. In the neighbourhood are copper workings. In 1895 about 3,000 Armenians were massacred here by the Turks. Pop. 41,559. Some 5 m. N.E. is an older Malatya, the ancient Melitēne, from which the majority of the people migrated to found the new town. A vilayet named from the town has a pop. of 438,397.

**Malaviya, MADAN MOHAN** (1862-1946). Indian politician. Born at Allahabad, Dec. 25, 1862, he was educated at the government high school and Muir central college. Associated with the Indian national congress almost from its inception, being a delegate in 1886, he edited *The Hindustan*, 1887, *The Indian Union*, 1889-92, and later helped to found the *Nationalist daily*, *The Leader*. On the United Provinces legislative council 1902-12, he was elected to the imperial legislative council in 1910,

sat ten years, and was president of congress in 1909, 1918, and 1933. He deprecated the extremism of its later manifestations, although obsessed by the idea of British exploitation of his country. His outstanding work was the creation of a Hindu university at Benares. When non-cooperation was rife in 1930, he resigned from the legislative assembly, and subsequently underwent imprisonment. Nevertheless he came with Gandhi as a delegate to the round table conference in London. This vehement advocate of Indian political advancement died at Benares, Nov. 12, 1946.

**Malay.** People of Mongoloid stock in the Malay Peninsula and Archipelago. The name is employed as a synonym for the Oceanic branch of the S. Mongols, whose physical characters became softened in their tropical habitat, and whose cultural inheritance was modified by the acquisition of seamanship. This Malayan or proto-Malay type includes the main populations of Java and Sumatra, the Borneo Iban, the Celebes Bugi, the Bajau rovers, some Philippine and Formosan tribes, and distant offshoots in Madagascar. They number 50,000,000 all told.

The true Malays, forming a small fraction of the Malayan branch, call themselves Orang Malayu. They descend from a proto-Malay tribe in Sumatra, who, after some infusion of Hindu blood and culture from A.D. 400 onwards, crossed to the mainland and founded Singapore about 1160. They spread also to



Malay. Chieftain in semi-European costume. Inset, head of typical Malay girl

Java, and carried their maritime trade and piracy to other coasts, often driving the Indonesian aborigines, as in Borneo, into the uplands. Recent colonies have reached other parts of the British Empire, Ceylon, and S. Africa.

A well-knit, olive-brown people, with high cheekbones and small hands, they betray some ethnic admixture, possess a uniform temperament, and are easy-going, reserved, impassive, and intelligent. Under Arab contact the Malays became muslimised during the 13th-15th centuries, but are still animist at heart. Their spirit-worship and sorcery include a belief in man-tigers, and the related semi-hypnotic state called latak, and they are subject to neurotic crises, especially in the form called running amok. They are addicted to cock-fighting and games of chance. Their language is a sub-family of the Austronesian division of the Austric family. See Amok; consult *The Modern Malay*, L. R. Wheeler, 1928.

**Malaya, Federation of.** That part of the Malay peninsula S. of Siam. The territories comprising the federation are: (1) the British Straits Settlements, formerly a crown colony, except Singapore (Penang I., Province Wellesley, Malacca); (2) the former federated Malay states, which were under British protection and administration (Perak, Selangor, Negri Sembilan, Pahang); (3) the former unfederated states, which were under British protection only (Kedah, Kelantan, Trengganu, Johore, Perlis).

The possessions of the E. India co. became a crown colony in 1867; the federated states, each of which retained its Malay ruler, came under British administration between 1888 and 1896, in which year they were federated under a British resident-general; Johore came under British protection in 1819 when Singapore was founded; the other four states passed from Siamese to British suzerainty by a treaty of 1909.

During the Second Great War the Japanese attacked Malaya Dec. 8, 1941. Forces which had been massed in French Indo-China landed at Singora, Kra, C. Patani and elsewhere in Siam, and N. of Kota Bharu in Kelantan. Air raids by the greatly superior Japanese air force on Malayan airfields and on Penang followed; while the sinking by air attack of H.M.S. Prince of Wales and Repulse in the Gulf of Siam destroyed British capacity to prevent at sea



Malaya. Map of the Federation of Malaya, including the British Straits Settlements and the former federated and unfederated Malay states

the passage of Japanese troop convoys. The Japanese advanced down the pen. in a three-pronged drive, two coastal thrusts and a central one, and it soon became clear that their troops were trained to a very high standard of jungle fighting. British, Australian, and Indian troops resisted stubbornly; but by the second week in Jan., 1942, the Japanese had reached Kuantan on the E. coast, and Kuala Lumpur in the W. On the night of Jan. 30-31, all Empire troops were withdrawn to Singapore I., on the N. coast of which the Japanese landed Feb. 8. On Feb. 15 Lt.-Gen. A. E. Percival surrendered, and the whole of Malaya was in Japanese hands.

In accordance with Japanese plans for their new order in S.E. Asia, a combined state of Malaya and Sumatra was set up with its capital at Singapore, renamed Shonan (Light of the South). In July, 1943, Japan agreed to the annexation by Siam of Kedah, Perlis, Kelantan, and Trengganu. Following the surrender of Japan, British forces reoccupied Singapore Sept. 5, 1945.

A month later, Oct. 10, the secretary for the Colonies announced in the house of commons a scheme for a Malayan Union comprising the federated and unfederated states and the British territories of Penang, Province Wellesley, and Malacca, Singapore becoming a separate colony. The Malay rulers, after first accepting this scheme, decided against it on the ground that it deprived them of too much of their sovereignty. A new plan worked out by a committee of six Malay and five British representatives came into effect Feb. 1, 1948, following the signing at Kuala Lumpur, Jan. 21, of the treaty establishing it by all the rulers except the sultan of Johore who, being incapacitated by gout, signed it in his own palace. This treaty set up the Federation of Malaya covering the same territories as the rejected Malayan Union, with a central govt., under a British high commissioner, composed of a federal executive council and a federal legislative council. Each state under its constitutional ruler had a state executive council and a council of state. The states

had control of their own finances and contributed to the central govt. The king's jurisdiction was limited to defence and external affairs; the rulers undertook to accept the advice of the high commissioner on all matters of govt. except those affecting the Muslim religion and Malay customs.

Of Malaya's pop. of some 5½ million, only about 40 p.c. is Malay; another 40 p.c. is Chinese, there are some 750,000 Indians, the rest are Europeans and Eurasians. All persons born in Malaya, and those resident there for not less than ten years, became citizens of the federation with electoral rights, eligibility for the state councils and employment in govt. service, etc., while remaining also nationals of their own territory (the peoples of the former Straits Settlements remained British). For a record of subsequent events see Malaya in the N.V. pages at the end of this work. See Malay Peninsula; consult also British Malaya, Sir F. Swettenham, 1929; Malaysia, R. Emerson, 1937; Strategy at Singapore, E. H. Miller, 1942; In Seventy Days, E. M. Glover, 1947.

**Malay Archipelago.** Variant name for the East Indies, the islands largely peopled by Malays, and lying near the Malay Peninsula. The larger islands, Borneo, Sumatra, and Java, stand on the Sunda continental shelf, which extends S.E. from Malaya and Coochin China at a depth of less than 250 ft. Celebes and the smaller islands to the S. and E. are the tops of submarine ridges which rise between deep basins, such as the Flores, Celebes, and Banda Seas, each more than 16,000 ft. below sea level. See Indonesia.

**Malay Peninsula.** Long, narrow peninsula in S.E. Asia, extending from the isthmus of Kra to Singapore. Its length is 700 m. and its maximum breadth 180 m. The Strait of Malacca separates it from Sumatra; on the E. is the China Sea. It includes the southern part of Siam. The backbone of the peninsula is a system of granitic forested mountains, with peaks, Yong Blar, Ulu Temengor, etc., exceeding 7,000 ft. in alt., and in general the ridge forms a political boundary. On the E. side the chief rivers, the Kelantan, Trengganu, and Pahang, form extensive basins, each comprising almost precisely a separate state; the separating ridge N. of the Pahang runs almost E. to W., and rises in Tahan to 7,186 ft. The rivers on the W. are shorter, the Perak being the longest; the



Malaya. Village scene in Pahang, Malaya, showing the native system of building on piles

Krian, Bernam, Sepang, and Kesang are political frontiers.

The coasts are usually swampy and mangrove-lined. The forests yield ebony, teak, sandalwood, and camphor; tin is mined in considerable quantities; gold is worked, and other ores exist; rubber is the most important export crop, rice the chief food grain. Elephants, rhinoceros, and seladang (*Bos gaurus*) are hunted; monkeys, snakes, tigers, leopards, lizards, and beautiful birds are found in the forest. Natural resources are exploited by Chinese and Tamil immigrants. The native Malay is content with the minimum of toil necessary to supply his scanty needs. A trunk rly. connects Singapore with the Siamese rly. system, and many miles of motor roads have been constructed. See Malaya.

**Malbork.** Polish name for the city of Marienburg (*q.v.*).

**Malcolm** (Gael., tonsured one of Columba). Name of four kings of Scotland, and since their time a popular Christian name.

**Malcolm I** (d. 954), son of Donald VI, succeeded Constantine II in 943. He was friendly with



Malcolm I, King of Scotland

**Malcolm II** (d. 1034), son of Kenneth III, contested the crown with his cousin Kenneth IV, and succeeded to it when his rival was killed in battle in 1005. In 1018 he conquered Lothian and the part of Cumbria N. of the Solway, but did

homage in 1031 to Canute. He was succeeded by Duncan I.

**Malcolm III** (c. 1025-93), son of Duncan I, fled when his father was slain by Macbeth in 1040 to



Malcolm III, King of Scotland

his uncle Siward, earl of Northumberland, who in 1054 put him in possession of Lothian and Cumbria. Three years later Malcolm slew Macbeth, and was crowned at Scone. About 1067 he married Margaret, sister of Edgar Atheling, supported his brother-in-law's claims, and invaded Northumberland five times. In 1092 he lost Cumberland, and on Nov. 13, 1093, he was treacherously slain with his eldest son Edward by Robert de Mowbray, earl of Northumberland, at Malcolm's Cross near Alnwick. Margaret, afterwards canonised, died a few days later. Malcolm, known as Canmore or Great Head, left four sons who succeeded him in turn; one daughter, Matilda, married King Henry I. See Macbeth.

**Malcolm IV** (1141-65), styled the Maiden, succeeded his grandfather David I, May 24, 1153. His reign was disturbed by revolts in Gallo-way and Moray, and by two risings of Somerled, lord of the Isles. He placed himself in 1157 under the protection of Henry II of England, to whom he surrendered Northumberland and Cumbria, and was confirmed in the earldom of Huntingdon. He accompanied



Malcolm IV, King of Scotland

the English army to Toulouse in 1159. He died Dec. 9, 1165.

**Malda.** District and town of India, in Bengal, in the Rajshahi division. The district lies E. of the Ganges, and is drained by the Mahananda river; four-fifths is cultivable, but only two-thirds is tilled; rice is the chief crop. The district headquarters are at English Bazar. Malda lies E. of the Ganges due N. of Calcutta, with which it has rly. connexion. Area, 2,004 sq. m. Pop. 1,232,618; town, 4,600.

**Malden.** City of Massachusetts, U.S.A., in Middlesex co. It is a northern residential suburb of Boston and linked with it by rly. Named after Maldon, England, it was the first place to petition the colonial government to withdraw allegiance from George III. It had been incorporated since 1649 and became a city in 1881. Manufactures include rubber boots and shoes, clothing, leather goods, paints and varnish, drugs and chemicals, and furniture. It has a fine collection of French and American pictures. Pop. 58,010.

**Malden and Coombe.** Mun. bor. of Surrey, England. Lying 3 m. W. of Kingston, it is a residential suburb of London, with several rly. stations. Merton College, Oxford, was founded here in 1264 and is still in possession of property in the neighbourhood. Pop. approx. 45,000.

**Maldivé Islands.** Group of 12 coral atolls in the Indian Ocean, 400 m. W. of Ceylon. It is a dependency of Ceylon; a constitution introduced in 1932 gave it a people's assembly, mainly elected, and a cabinet of four ministers under the sultan. The surface of the islands is chiefly jungle, but they are rich in coconut palms and produce millet and nuts. The people are Muslims, and are expert traders and navigators; they numbered 93,000 in 1941. That year a British naval base was set up for fuelling and watering convoys proceeding to the Far East and Australia; this base was known as Port T.

**Maldon.** Mun. bor., seaport, and market town of Essex, England. It stands on the Chelmer, where it enters the Blackwater estuary, 44 m. N.E. of London. It is served by rly. and has a shipping trade. Brewing, making agricultural implements, and fishing occupy the people. The chief buildings are All Saints' church, an Early English building with a triangular tower and hexagonal spire, which was restored as a

memorial to Washington; S. Mary's church; a 16th century grammar school; a 15th century town hall, originally D'Arcy tower; and a modern public hall. Maldon was a town, presumably important before the Norman Conquest. It



Maldon arms

received a number of charters granting privileges to the citizens, and gives its name to a county constituency. Roman remains have been found in the neighbourhood, and near are the ruins of Beeleigh Abbey. Market day, Thurs. Pop. 9,250.

**Maldon, THE BATTLE OF.** An Anglo-Saxon poem of the 10th century. It describes the fight between Norse invaders under Olaf Tryggvason, later king of Norway, and the East Saxon ealdorman Byrhtnoth, who fell in this battle, in 991. It is known only in a spirited fragment of 600-700 lines, from a MS. destroyed in the fire at the Cotton Library, 1731. The text appears in H. Sweet's Anglo-Saxon Reader, and a verse translation by Lt.-Col. Lumsden was published in Macmillan's Magazine, March, 1887.

**Maldonado.** Maritime dept. of S. Uruguay, fronting the Rio de la Plata. Mainly level country, except in the N., the soil is fertile, and agriculture and stock raising are largely engaged in. Maldonado, the capital, on the coast, 30 m. E. of Montevideo, was founded in 1757 and has a fine harbour, sheltered by the island of Goriti at its entrance. It is a naval station, fortified, and a seaside resort. Regularly planned, with a fine plaza, it exports cattle, hides, wool, grain, and limestone. Area, 1,587 sq. m. Pop. 67,015.



Maldon, Essex. Picturesque street in this small but ancient market town and port on the estuary of the river Blackwater

**Malebranche, NICOLE** (1638-1715). French philosopher. Born in Paris, Aug. 6, 1638, he joined



Nicole Malebranche, French philosopher

the Oratorians, and studied the Church fathers and historians, afterwards turning to philosophy. His chief works are *The Search after Truth*, trans. 1694, and *Entretiens sur la Métaphysique*, 1688. Died Oct. 13, 1715.

His philosophy is founded upon that of Descartes, but he refuses to admit the existence of innate ideas. He asserts that we see all things in God, since God, as the place of spirits, contains our spirit in Himself. He denies the action of the soul upon the body, seeing in their movements only "occasional" causes. Neither our will nor our intelligence can do anything alone; it is God that decides our actions. A study of his philosophy by R. W. Church appeared in 1931.

**Male Fern** (*Dryopteris filix-mas*). Fern of the family Polypodiaceae. A native of the temperate regions of the N. hemisphere, and of India and Africa, it has a solid woody rootstock formed of the bases of decayed fronds. The lance-shaped fronds are, in well-developed plants, 3-4 ft. long; the leaflets or pinnae tapering to a point and deeply cut into lobes. The lower part of the stock is densely clothed with pale brown scales, which appear more sparingly on the upper portion. The clusters of spore-cases are found in two brown lines on the back of the lobes. The rootstock contains an oil used as a vermifuge. The name indicates its robust habit. See Fern illus.



**Maleme.** Village of Crete, in the N.W. corner of the island, 10 m. W. of Canea. At Maleme German glider-borne troops landed in the attack on Crete, May 20, 1941, and having gained control of the airfield and beaches, prepared for landings which led to the capture of the whole island. See Crete in the Second Great War.

**Malerkotla.** A former state of India, now part of the Patiala and E. Punjab union. To the S. of Ludhiana district., it was a Mahomedan state under an Afghan ruler. It came under British protection in 1809. Wheat, cotton, sugar-cane, and tobacco are produced. The former cap., Malerkotla, is 30 m. S. of Ludhiana by rly. Area, 165 sq. m. Pop. 88,109; town, 30,100.

**Malesherbes, CHÉRIEN GUILLAUME DE LAMOIGNON DE** (1721-94). French statesman and ad-



C. G. de Malesherbes,  
French statesman

vocate. Born in Paris, Dec. 6, 1721, he became counsellor to the parliament of Paris, and succeeded his father in 1750 as president of the Cour des Aides, in which capacity he addressed himself to the abolition of official abuses. As press censor he permitted a wide latitude. In 1771 his condemnation of legal abuses ended in his being banished to his estates. On the trial of Louis XVI by the Convention, when all others had deserted the king, he undertook to defend him. For this he was marked down by the revolutionists, and was arrested and guillotined in Paris, April 22, 1794. His fearless devotion to duty has become almost proverbial. *Consull* Œuvres Choiesies, 1809; Lives, E. Vignaux, 1874; J. M. S. Allison, 1938. *Pron.* Malzayrb.

**Malet, SIR EDWARD BALDWIN** (1837-1908). British diplomatist. Born at The Hague, Oct. 10, 1837, he was educated at Eton and Corpus Christi College, Oxford, entered the diplomatic service, and as an attaché gained experience in Washington, Paris, Peking, and Rome. During the Commune of 1871 he was in charge of the British embassy in Paris. In 1878 he acted as plenipotentiary at a critical time in Constantinople, and had a still more difficult task as British agent and consul-general in Egypt, 1879-83. Ambassador in Berlin, 1884-95, he was knighted

in 1881, and in 1904 succeeded to the family baronetcy. From 1900 to 1906 he was a member of The Hague court of arbitration. Malet died June 29, 1908.

**Malet, LUCAS** (1852-1931). A British novelist. Younger daughter of Charles Kingsley (*q.v.*), she was born at Eversley, her Christian names being Mary St. Leger. She was educated at University College, London, and married in 1876 William Harrison (d. 1897), rector of Clovelly. She published her first novel, *Mrs. Lorimer*, in 1882, and established herself as a best-seller with *The Wages of Sin*, 1891. Her other books included *Colonel Enderby's Wife*, 1885; *The Gateless Barrier*, 1900; *History of Sir Richard Calmady*, 1901; *The Golden Galleon*, 1916; *The Tall Villa*, 1920; *The Dogs of Want*, 1924. She died Oct. 27, 1931.

**Malham.** Village in the W. Riding of Yorkshire, England. On the Aire, it is 6 m. E. of Settle. About a mile from the village are Malham Cove and Gordale Scar, two precipitous amphitheatres of rock 300 ft. in height, produced by the vast displacement of the mountain limestone known as the Craven Fault. N. of the cove is Malham Tarn, a secluded upland lake about 3 m. in circumference, the property of the nation. Charles Kingsley's *Water Babies* was partly written near. See Aire illus.

**Malherbe, FRANÇOIS DE** (1555-1628). A French poet. Born at Caen, July 13, 1555, he lived for some years at Aix, where he married Marie de Coriolis in 1581. About 1605 he began to enjoy court favour under Henry IV, and continued his successful career under



François de Malherbe,  
French poet

Louis XIII. Deeply affected by the death of his son in a duel, 1627, commemorated in a fine sonnet, he died in Paris Oct. 16, 1628. Malherbe's work was chiefly done in his later years, addressed to court patrons or celebrating public events. The odes and stanzas are laboriously finished and technically correct, but lacking in real poetic inspiration. But his fine precision of language and his critical influence had a profound effect on the development of French poetry during the next century. Notable pieces by Malherbe are his *Consolation à M. du Périer* and his paraphrase of Psalm 145.

**Mali** (Skt., garland). Indian gardener caste. The Marathi name is Marar. Numbering some two millions, they are dark, undersized descendants from the pre-Aryan population. Their earliest occupation was growing flowers for use in Hindu ritual. They eat goat flesh and mutton, and in modern times have largely monopolised market-gardening from the Punjab to Hyderabad.

**Malibran, MARIA FÉLICITÉ** (1808-36). French opera singer. Born in Paris on March 24, 1808,



M. F. Malibran,  
French singer

she was a daughter of the singer Manuel Garcia (*q.v.*), was trained as a singer in Italy, and made her first appearance in The Barber of Seville, in London, 1825. After an instant success she went with her father to America, where she made an unhappy marriage with a French merchant, and in 1827 returned to sing at the Théâtre des Italiens in Paris. Gifted with powers of acting as well as a fine voice, she was one of the most popular singers of her day. Divorced from Malibran, she married Charles de Bériot, a Belgian violinist, 1835, but died in Manchester, Sept. 23, 1836, at the age of twenty-eight.

**Malic Acid.** Substance discovered by Scheele in 1785, in gooseberries and unripe apples. It has subsequently been shown to be widely distributed in the juices of plants, and may be prepared from the berries of mountain ash (*Sorbus aucuparia*), collected just before they begin to redden. The juice of the berries is expressed, milk of lime added, and the calcium malate, which separates as a white sandy powder, is collected, washed, and decomposed with hot dilute nitric acid. On cooling, the malic acid crystallises out. Chemically it may be obtained by partial reduction of tartaric acid or by the catalytic oxidation of benzene.

**Malice.** Term used in English law. It may mean either actual ill-will formed against another in the mind of the person charged with malice; or the doing of some kind of deliberate act so injurious to another that the law will imply evil intent. Thus in murder, malice aforethought is required; this has a technical meaning, including not only the deliberate intent to kill the murdered person, but also



the making of a "suicide pact" or the infliction of a wound likely to cause death or grievous bodily harm, even though neither was intended.

In libel, the deliberate act of writing causes the law to presume malice; but not so in slander. When a libel or slander is proved to have been written or uttered on a privileged occasion, *e.g.* when giving a servant's character, express malice must be proved. It used to be thought that an act lawful in itself might become unlawful if it were done maliciously, but the house of lords repelled this doctrine in the trades union case of *Allen v. Flood*, 1898. See Libel; Slander.

**Malicious Damage.** A legal term meaning damage done to property wilfully and purposely, as distinct from an act done in ignorance or by accident. If, in order to assert a claim of right, damage is done to property, it is not malicious unless the damage done is in excess of what was necessary to assert the claim. Sometimes malicious damage is a felony, *e.g.* damage to sea-walls, canals, reservoirs, docks, etc., sometimes merely an offence punishable by fine by a magistrate's court.

**Malicious Prosecution.** Term used in English law for the preferring of a criminal prosecution, or the presentation of a bankruptcy petition, maliciously and without reasonable or probable cause. In an action for damages for such a prosecution the plaintiff must

prove a negative, namely, that there was no reasonable or probable cause for the prosecution, and this is to be decided by the judge and not the jury. He must also prove that he was acquitted of the charge, and that the prosecutor acted maliciously, *i.e.* not in exercise of a real right, and not honestly, but from temper, or from actual ill-will. See Malice.

**Malignant Disease** (Lat. *malignus*, evil). Term applied to any virulent manifestation, usually ending fatally, of a disease ordinarily simple, *e.g.* scarlet fever; but a cancerous growth of some type is usually understood. This is characterised by rapid progress, power to infiltrate into neighbouring tissues, and a tendency to form secondary deposits in other organs, the cells being carried by the lymphatic or blood stream; also by its termination in the death of the victim.

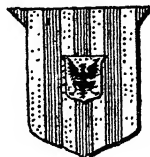
**Malignant Pustule.** Name for the boil-like sore which marks the site of entrance of the bacillus of anthrax (*q.v.*).

**Malignants.** Term first used by the parliamentarians, as in the Grand Remonstrance, of the advisers of King Charles I in his

struggle with parliament. Strafford and Laud were named as the chief of these malignants. Eventually the term came to be applied to all supporters of the king.

**Malindi.** Harbour in Kenya Colony. It is 66 m. N.E. of Mombasa by sea, at the mouth of the Sabaki river. The town was once the capital of Portuguese E. Africa, and during the Arab period was of considerable importance. Rubber is cultivated in the area; from the port maize, copra, and cotton are exported.

**Malines** OR **MECHLIN** (Flemish, *Mechelen*). Fifth town of Belgium, in the prov. of Antwerp. It is 13 m.



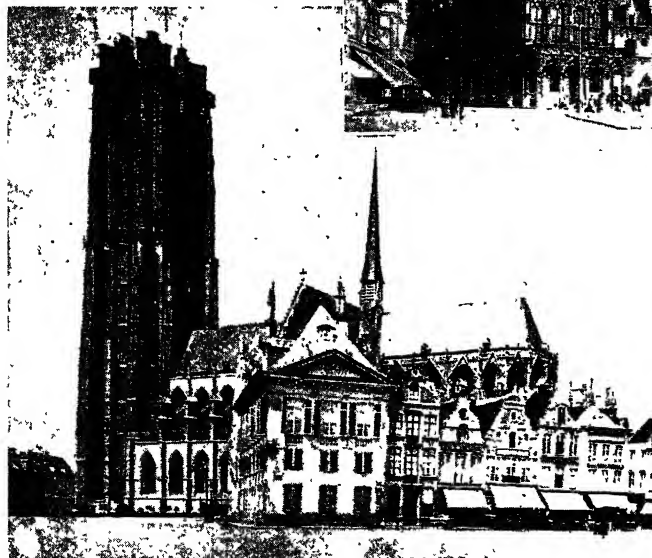
Malines arms

by rly. N.N.E. of Brussels, and lies in flat country on the river Dyle, the branches of which intersect the town. It is a busy rly. junction, with extensive rly. engineering sheds, and has furniture making, printing, and carpet and lace making, and other textile industries, but is best known as the ecclesiastical capital of Belgium and seat of the archbishop-primate.

The cathedral of S. Rombold is a noble Gothic building, built about 1300-12, but remodelled during the 14th-16th centuries. The great W. tower (318 ft.), begun in 1452, was never completed. The interior contains a large altarpiece by Van Dyck and other pictures. Among

many churches are those of S. John, 15th century, and Notre Dame, founded 1255 and rebuilt in the 16th century, both containing paintings by Rubens, and the Baroque churches of Notre Dame du Val-des-Lis, 1662-1715, the Grand Béguinage, Notre Dame d'Hanswyk, and SS. Peter and Paul, 1677. The palais de justice is a picturesque group of Gothic and Renaissance buildings. On the Grande Place, with characteristic Flemish gabled houses, stands the Cloth Hall, completed 1326 (now town hall).

After Charlemagne, Malines came to Lotharinga 915, under the rule of the bishops of Liège. Having developed a certain strength and independence, and fought the count of Flanders to whom the bishop had ceded his rights, it was



Malines, Belgium. Cathedral of S. Rombold, 14th-16th cent. Top, Cloth Hall; right-hand part 14th cent., left-hand Gothic part rebuilt after 1913 from a 16th cent. design

incorporated with Burgundy in 1384. A period of prosperity followed, and under Margaret of Austria as *stadholder*, Malines was the virtual capital of the Netherlands, 1507-30. In 1559 it became the seat of an archbishop. A famous holder of that office was Cardinal Mercier during the First Great War. The town suffered several bombardments during both Great Wars, but its main treasures survived. In the Second Great War, it was liberated by the British without fighting on Sept. 4, 1944, during their spectacular week's advance from the Seine to Antwerp. Pop. 60,729, essentially Flemish.

**Malingering** (Fr. *malinger*, sickly). Feigning illness, either from hysteria, or from the hope of escaping disagreeable duty as in war, or in postponing return to work in the hope of drawing compensation pay. There is generally some basis for the symptoms complained of. In cases associated with payment of compensation, the cure is often the settling of the claim. The experienced consultant, by reason of knowledge of his special branch of medicine, and by the use of instruments, can usually decide whether the symptoms recounted are possible or probable or inconsistent with known medical facts.

**Malinowski, BRONISLAW** (1884-1942). A British anthropologist. Born in Cracow, April 7, 1884, he studied at the universities of Cracow and Leipzig, and at the London School of Economics. From 1914 onwards he visited New Guinea, N.W. Melanesia, and S. and E. Africa where he carried out research among native tribes. His studies of the ethnology and ethnography of the Mexican Indians emphasised the cultural effect on primitive tribes of their contacts with more advanced peoples. He later adopted British nationality and eventually became one of the world's leading anthropologists. He left England in 1939 to become professor of anthropology at Yale, dying at New Haven, Conn., U.S.A., May 16, 1942. His many books include: *The Family Among the Australian Aborigines*, 1913; *Argonauts of the Western Pacific*, 1922; *Myth in Primitive Psychology*, 1926; *Sexual Life of Savages in N.W. Melanesia*, 1929; *The Foundations of Faith and Morals*, 1936.

**Malinowsky, RODION YAKOVLEVITCH** (b. 1899). A Russian soldier. Born in Odessa of peasant stock, he served in the First Great War in a Russian brigade in

France, and was a corporal when in 1917 he joined the revolutionaries. He returned to Russia



R. Y. Malinowsky,  
Russian soldier

and became an officer in the Red army; despite a short spell of retirement, he rose to the rank of major-general, and in 1939 was commanding the Soviet 6th army. His forces fought a successful delaying action on the Dnieper in 1941, and defeated the German efforts to relieve Stalingrad in 1942. In 1943 he commanded the troops which reoccupied Rostov; he took part in the fighting in the Ukraine, and entered Bucharest, Aug., 1944, where he signed the United Nations' armistice with Rumania. He was promoted colonel-general and general of army in 1943, and marshal of the Soviet Union in 1944. His troops led the drive through Hungary into Austria, 1944-45. In 1941 he was decorated with the Order of Lenin, and in 1943 with the Order of Suvorov.

**Mall, THE.** London thoroughfare. A tree-lined avenue, it runs along the N. side of St. James's Park between Admiralty Arch at Charing Cross and the Queen Victoria Memorial in front of Buckingham Palace. It is used on state occasions as a processional route, and, like Pall Mall (*q.v.*),

derives its name from the game of paille-maille, or pell-mell, played here in Charles II's time. It has on the N. the gardens of Carlton House Terrace, the Duke of York's Steps leading to Waterloo Place, and the gardens of Marlborough House, St. James's Palace, and Lancaster House. See Admiralty Arch; St. James's Park.

**Mallaby-Deeley, SIR HARRY** (1863-1937). British financier and politician. Born Oct. 27, 1863, son of W. C. Deeley, he was educated at Shrewsbury and Trinity College, Cambridge. He added the surname of Mallaby in 1922.

He was a prominent financier and a dealer in real estate. Among his extensive financial operations was the purchase from the duke of Bedford of Covent Garden, 1913, for a sum exceeding £1,750,000. Shortly after the First Great War, when tailoring prices appeared excessive, he promoted a scheme for the retailing of men's ready-made suits at a low price: an enterprise reputed to have cost him £60,000; his tailoring shop in the Strand was well known. Conservative M.P. for Harrow, 1910-18, and E. Willesden, 1918-22, he was created a baronet in 1922. He died Feb. 4, 1937.

**Mallard.** Common wild duck of Great Britain and the N. hemisphere. In the male the head and neck are glossy green, the breast chestnut, the underparts greyish white, and the wings reflect a metallic violet hue. The beak is greenish yellow, the legs and feet red. After the breeding time the colours are less bright. The female is smaller and has mottled brown and buff plumage. The mallard breeds in most retired districts of Gt. Britain that are near to water; but great numbers are winter migrants. It feeds upon plants, snails, worms, and insects, and usually nests in a hollow of the ground near the edge of a river or pond, but sometimes in a tree. Most of the domesticated ducks are descended from the mallard. See Duck.



The Mall, London. View along the avenue from Buckingham Palace, on the occasion of the Victory Parade, June 8, 1946. In the foreground is the Queen Victoria memorial

**Mallarmé, StÉphane** (1842-98). French poet. Born in Paris on March 18, 1842, Mallarmé was



StÉphane Mallarmé,  
French poet

educated at Auteuil and Sens, and spent some time in England. From 1862 onwards he published poems in various reviews, translated E. A. Poe's The Raven, 1875, other of Poe's poetry in 1888, issued his beautiful L'Après-midi d'un Faune in 1876, and collected poems in 1887. The recognized leader of the Symbolists, Mallarmé exercised great influence on the rising generation of French poets. After his retirement from teaching in 1892, he published Vers at Prose, 1893, and Divagations, 1897. He died at Valvins, near Fontainebleau, Sept. 9, 1898. His Vers de Circonstance, a collection which shows his delicate craftsmanship, appeared in 1920. Consult French Profiles, E. Gosse, 1905; The Symbolist Movement in Literature, A. Symons, 2nd ed. 1908.

**Malleability.** A physical property. Malleable materials can be deformed permanently in all directions normal to a permanent compression strain without any rupture of the material.

This property is particularly important in such processes as the forging, pressing, and rolling (*q.v.*) of metals and metal alloys, many of which are malleable in varying degrees. Probably the most malleable metal is gold which can be hammered out to thicknesses of the order of one-300,000th part of an inch. Some metals are malleable only at temperatures above their recrystallisation temperature (*q.v.*) and a few only at temperatures below their recrystallisation temperature, the former because of cold shortness and the latter because of hot, or red, shortness. Some metals and materials are malleable only over a very limited range of temperature.

**Malleco.** Inland province of Central Chile. It is bounded E. and N. by the prov. of Biobío, and S. by Cautín. The chief products are wheat, timber, and cattle. Gold is found. The capital is Angol, 70 m. by rly. S.S.E. of Concepción. Area, 5,511 sq. m. Pop. 154,174.

**Mallee Scrub** (*Eucalyptus dumosa*). Species of eucalyptus, a native of Australia. The root forms

a flat disk about 3 ft. across and 8 or 10 ins. thick, known to the colonists as a "scab." From its underside numerous rootlets descend until they reach moisture, often to a depth of over 30 ft. From the upper side there are many slender stems 14 or 15 ft. long, bearing dense clusters of leaves at the summits. The scrub extends monotonously over many miles of the dry plains, but the rootlets, cut into lengths, yield a supply of drinkable fluid.

**Malleson, (WILLIAM) MILES** (b. 1888). British actor. Born at Croydon, Surrey, May 25, 1888, he went to Emmanuel, Cambridge, then studied at the R.A.D.A. He made his first stage appearance at Liverpool, 1911, his first London appearance 1913. He was specially successful in Shakespearian comedy parts, *e.g.* Aguecheek, Quince, Polonius. A member of John Gielgud's co., 1944-45, he also had several seasons with the Old Vic co. His English versions of Molière's L'Avare (The Miser) and Tartuffe were put into the Old Vic repertory. His first wife, Lady Constance Mary Annesley (b. 1895), acted under the name Colette O'Neil.



Miles Malleson,  
British actor

**Malling.** Name of a parish and market town and of a village in Kent, England. West Malling, or Town Malling, is 5 m. W. of Maidstone, on the Pilgrims' Way (*q.v.*), with a rly. station. It is notable for the ruins of an abbey founded for a community of Benedictine nuns by Bishop Gundulf in 1090, and partly rebuilt in 1738. Near by is St. Leonard's Tower, built about 1070. The village of E. Malling has an old church. For the horticultural research station, see East Malling.

**Mallock, WILLIAM HURRELL** (1849-1923). British author. A nephew of J. A. Froude, he was educated privately and at Balliol College, Oxford. He first attracted



W. H. Mallock,  
British author

attention with a semi-philosophical satire. The New Republic, 1877. Later books, aiming at exposing the fallacies of radical, socialist, and

secularist ideas, include Social Equality, 1882; Labour and the Popular Welfare, 1893; Aristocracy and Evolution, 1898; Social Reform, 1914; and The Limits of Pure Democracy, 1918. He also wrote novels and Memories of Life and Literature, 1920. He died, April 2, 1923.

**Mallory, GEORGE LEIGH** (1887-1924). British mountaineer. A member of the Everest expeditions of 1922 and 1924, he lost his life in an attempt with Andrew Irvine to reach the summit. They were last seen at 28,239 ft. on June 8. It is not known if they achieved their object before they died. (Consult The Epic of Mount Everest, Sir F. Young-husband, 1926.) Sir Trafford Leigh Mallory (*q.v.*) was a younger brother.



G. L. Mallory,  
British mountaineer

**Mallow** (*Malva*). Genus of herbs of the family Malvaceae. They are natives of Europe, temperate Asia, and N. Africa. They have large, lobed, or divided leaves, and showy rose, purple, or white flowers. The fruit is a ring of large seeds, each in a leathery shell. The common mallow (*M. sylvestris*) has a stem two or three ft. in height, with lobed leaves and blue-purple flowers. Musk mallow (*M. moschata*) has the leaves divided into slender segments, and pale rosy flowers. Marsh mallow (*Althaea officinalis*) belongs to a separate genus which includes the hollyhock.

**Mallow.** Market town, urban dist., and watering-place of co. Cork, Eire. It stands on the Blackwater, 21 m. from Cork, with a station on the Eire State rly. It has a mineral spring, for which there is a pump-room, and there are ruins of a castle once belonging to the Desmonds. The industries are tanning and milling, while the town is the centre for an agricultural district and for salmon fishing. It has a large sugar-beet factory, with 1,000 employees. The town was seriously damaged by fire in Sept., 1920, as the result of reprisals for the action of some insurgents who raided the barracks and shot dead a sergeant of the 17th Lancers. The shooting of several railwaymen here in Jan., 1921, led to the threat of a rly. strike in England, but this was averted by the appointment of a military court of inquiry. Market days, Tues. and Fri. Pop. 5,217.

**Malm.** Geological term used in Germany to denote the Upper Jurassic beds—Oxford Clay to Purbeck. See Jurassic System.

**Malmaison.** Château of France, in the dept. of Seine-et-Oise. It lies 4 m. S.E. of St. Germain-en-Laye, and 6 m. by tram from Paris. The château, dating from the early 17th century, but rebuilt under Napoleon I, is famous as the residence of the Empress Josephine (*q.v.*), who died here in 1814. For some years the property of Queen Christina of Spain, it was bought by Napoleon III. In 1900 it was given to the nation by D. Osiris.

**Malmédy.** Town and district of Belgium. The town is 25 m. S. of Aix-la-Chapelle on the river Warche, and lies amid steep, wooded hills. It has a population of 5,000, mostly Walloons, who are chiefly employed in tanneries and paper mills. The dist. covers an area of 318 sq. m., with a pop. of 37,000, of whom 9,500 are Walloons. The staple industry is dairy farming. With the adjoining dist. of Eupen (*q.v.*), Malmédy was given to Prussia in 1814. By the treaty of Versailles, 1919, Germany renounced in favour of Belgium all rights and title over the two dists., in which a plebiscite was permitted. Only 62 persons voted against annexation, of whom 43 were German officials, and Malmédy was reunited to Belgium in Sept., 1920.

Malmédy was occupied by the Germans on May 10, 1940, and on May 18 was reincorporated into Germany. The town, liberated by troops of the U.S. 1st Army on Sept. 12, 1944, was hotly contested during the German Ardennes offensive in Dec., being severely bombed in error by U.S. aircraft while actually occupied by Allied forces. The Germans failed to retake the town. See map in p. 588.

**Malmesbury.** Mun. borough and market town of Wiltshire. It stands on the Avon, 17 m. W. of Swindon and 94 m. from London, with a rly. station. The chief building is the church of S. Mary and S. Aldhelm, which was part of the



Malmesbury arms

church of the Benedictine abbey. It is mainly of the 12th century, and is noted for its beautiful Norman porch. There is a market cross of the 16th century in the market place. The town has a trade in agricultural produce, and has factories manu-

facturing electrical and electronic equipment. Malmesbury grew up round the abbey, which developed from a hermitage founded by an Irish missionary named Maildulf, hence Malmesbury. The magnificent monastic buildings, of which little remains, were erected about

this time, and in the 12th century a castle was built here. Malmesbury was long known for its manufacture of cloth. Fairs and markets were granted to the citizens, and the town was separately represented in parliament, 1295–1885. Pop. 2,334.

**Malmesbury, JAMES HARRIS, 1st EARL OF (1746–1820).** British diplomatist. Born at Salisbury, April 21, 1746, the son of James Harris, M.P. and author, he was educated at Winchester and Oxford, and in 1768 began a long diplomatic career. He was first at Madrid; was minister at Berlin, 1772–76, at St. Petersburg, 1777–83, and at The Hague, 1783–88. In 1788 he was made a baron and in 1800 an earl. He died Nov. 21, 1820, and was succeeded by his son James Edward (1778–1841). His Diaries and Correspondence were edited by the 3rd earl of Malmesbury, 1844, who also published a volume of his grandfather's letters, 1870.

**Malmesbury, JAMES HOWARD HARRIS, 3RD EARL OF (1807–89).** British politician. The son of the 2nd earl, he was born March 25, 1807, and educated at Eton and Oriel College, Oxford. In 1841 he entered the house of commons as M.P. for Wilton, but in the same year he became a peer. Attached to the Tory party, he was foreign minister in the short ministries of 1852 and 1858–59. From 1866 to 1868 he was lord privy seal, as he was from 1874–76. In 1884 he published his Memoirs of an Ex-Minister. He died May 17, 1889, and was succeeded by his nephew Edward James (1842–99). In 1899 James Edward (b. 1872), the latter's son, became 5th earl. He was chairman of the London Hospital Saturday fund 1921–38, and a prominent Freemason.

**Malmesbury, WILLIAM OF (c. 1093–c. 1143).** English chronicler. A monk of Malmesbury, he



Malmesbury, Wiltshire. Norman south porch of the abbey  
Valentine

passed most of his adult life there. Having studied the work of Bede, he began to write an account of the history of England, the *Gesta Regum*, dedicated to his friend, Robert, earl of Gloucester, the narrative being continued to 1142 in his *Historia Novella*. He also wrote a *Gesta Pontificum Anglorum*. William is probably the best extant authority for the reigns of the Norman kings.

**Malmgren, FINN (1895–1928).** Swedish meteorologist. Born at Falun, he became assistant professor at Borno hydrographic institute, joining Amundsen in the N. Polar basin in 1922, and later becoming meteorologist to the expedition. He was also meteorologist to Nobile in the airship Italia on the N. Pole expedition in 1928 and was injured when the Italia crashed on the ice, May 25, 1928. To bring help he and two companions set out for Cape North, but on June 15, unable to go any farther, he induced his companions to go on without him. As a memorial of this sacrifice a professorship was founded at Uppsala university.

**Malmö.** Seaport of Sweden, capital of the län or co. of Malmöhus. It stands on the Sound,



Malmö arms

almost opposite Copenhagen, 16 m. away. An important naval port and rly. junction, it has a castle, now partly used as a barracks. The town hall dates from 1546 and the church of S. Peter from the 14th century. The harbour is capacious and well equipped with docks, warehouses, etc. There are shipbuilding yards, iron-works, and breweries, besides factories for the production of sugar, tobacco, and textiles. A large trade is carried on in timber,

matches, chalk, cement, and agricultural produce. Communication is maintained across the Sound by train ferries. Malmö was fortified in the Middle Ages, and, owing to its position, became an important seaport when the Baltic trade was at the height of its prosperity, during the Hanseatic period. Pop. 171,158.

**Malmöhus.** A län or co. of Sweden. Situated at the S. extremity of Sweden, the S. half of the peninsula of Scania, it is one of the most fertile areas in the country. Malmö is the capital. Area 1,871 sq. m. Pop. 551,647.

**Malmsey.** Name given to a white or red wine, originally made in Crete or other Greek islands. It was exported from Napoli di Malvasia, in the Morea, and from its medieval French name, *Malvesie*, the older form, *Malvoisie*, is derived. It is a sweet, luscious, white wine of high alcoholic content, and is now chiefly produced in the Azores, Canaries, Madeira, Sicily, and Sardinia.

**Malmstone.** A local variety of Upper Greensand. It is a siliceous rock, and some hard fine grained beds have been used in buildings. Other varieties have been in demand as firestones for lining limekilns, etc.

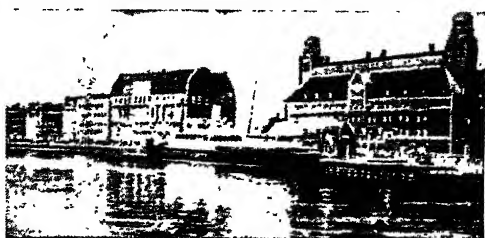
**Maloja** or **Maloggia.** Mountain pass of Switzerland in the canton of Grisons. It begins at St. Moritz, and leads to Chiavenna, in the prov. of Sondrio, Italy. Lowest of the passes between the two countries, with an alt. of 5,940 ft., it descends into the Bregaglia valley, the beginning of the Engadine.

**Malolos.** A town of Luzon, Philippine Islands, the capital of the prov. of Bulacán. A busy trading centre, it stands on a channel of the Pampanga delta, N.W. of Manila, about 5 m. from the sea, and close to the Manila rly. Rice is the chief article of trade. Malolos was chosen as the seat of government during the revolt of the Filipinos against the authority of the U.S.A., 1898-99. Pop. est. 26,000.

**Malone, EDMUND** (1741-1812). British critic. He was born in Dublin, Oct. 4 1741, and educated at Trinity College. He settled in London in 1777, and devoted himself to literature. He died May 25, 1812. His great work is his edition of Shakespeare in 10 volumes,



Edmund Malone,  
British critic  
After Reynolds



Malmö, Sweden. Quays and warehouses on the inner harbour

1790. He detected the Shakespearian forgeries of William Henry Ireland (*q.v.*), and was also one of the first to deny the authenticity of the so-called Rowley poems of Chatterton (*q.v.*).

**Malonic Acid.** White crystalline substance discovered in 1858 by Dessaignes. He prepared it by oxidising malic acid with potassium bichromate. It is best prepared from a mixture of monochloroacetic acid, potassium carbonate, and potassium cyanide. When malonic acid is heated at a high temperature, carbon dioxide and acetic acid result. It is soluble in water, alcohol, and ether. Malonic ester, which is prepared from the acid, is an important agent used in the synthesis of organic substances.

**Malory, SIR THOMAS** (*fl.* 1469). English romance writer. According to Bale, he was a Welshman, but Prof. Kittridge showed, in *Who Was Sir Thomas Malory?*, that he was a knight of Newbold Revell in Warwickshire. His *Morte d'Arthur* is the most important English prose work written before the age of Elizabeth, a compilation and free translation mainly from French sources of the old Arthurian romances, arranged in more or less connected form. Finished in 1469, it was first printed by Caxton in 1485, and has been many times reprinted. The work, which has influenced poets, prose-writers, and artists from Spenser to our own time, is in 21 books. A notable modern edition is that of Oskar Sommer, 3 vols., 1889-91. See *Morte d'Arthur*.

**Malot, HECTOR HENRI** (1830-1907). French novelist. He was born at Rouen, May 20, 1830. In 1858 he published *Victimes d'Amour*, the first of a series of novels largely presenting the period of the Second Empire. Several of his novels were translated into English, *Sans Famille*, 1878 (Eng. trans. *No Relations*, 1880) achieving wide success. He died July 19, 1907.

**Malpas.** Market town of Cheshire, England. It is 13 m. S.E. of Chester, and has a rly. station. Chief building is the Perpendicular

church of S. Oswald. This was restored in the 19th century. There was a castle here in the Middle Ages, and here Reginald Heber (*q.v.*) was born. Pop. 1,101. There is a Malpas in Cornwall, 2 m. from Truro.

**Malpighi, MARCELLO** (1628-94). Italian anatomist. He was born March 10, 1628, near Bologna. He discovered by means of the microscope capillary circulation, blood corpuscles, and important facts relating to the skin, the kidneys, and the spleen, and he was admittedly the father of microscopic anatomy. He used this instrument also in botanical research, and his *Anatomia Plantarum* was published by the Royal Society. He wrote many treatises, the chief being *On the Lungs*; nearly all were also pub. in London. Died in Rome, Nov. 30, 1694. *Pron.* Malpeeghee.



M. Malpighi,  
Italian anatomist

**Malplaquet, BATTLE OF.** Allied victory over the French in the War of the Spanish Succession, Sept. 11, 1709. Malplaquet is a French village in the dept. of Nord, 10 m. S. of Mons. The duke of Marlborough and Prince Eugene, in command of the allied British and imperial troops, had been bivouacked opposite the French army of Marshal Villars for two days, Marlborough impatiently awaiting the concurrence of the Dutch envoys to make an attack. On either side over 90,000 men were engaged,

At 9 a.m. the Prussians and Austrians attacked, but were resisted stubbornly. Not till Marlborough had hurled three British battalions into the fray were the French forced back. The Royal Irish regiment then charged and totally routed the Irish brigade in the service of France, and the battle spread. The prince of Orange, on the left, was repulsed with overwhelming losses by the French; Eugene and Marlborough at the head of their troops made an irresistible assault on the centre and right, and eventually the Allies began a general advance before which the whole French force retired. Marlborough's own losses were too heavy for him to follow. In the whole war no battle



approached Malplaquet for its fierce fighting and desperate resistance, the Allies losing 20,000 men, and the French 12,000. The principal result was that it gave Mons to the Allies. See Spanish Succession, War of the.

**Malraux, André** (b. 1895). French writer and politician. As a young man he travelled widely, and conducted an archaeological expedition in Indo-China. He later edited the *Nouvelle Revue Française*. He served with the republican army during the Spanish Civil War, of which he gave his impressions in *L'Espoir* (Eng. trans. *Days of Hope*). One of the leading French novelists of his day, his chief works included *Tentation de l'Occident*, *Les Conquérants*, *La Voie Royale*, and *La Condition Humaine* (Eng. trans. *Man's Fate*). During the Second Great War, he fought with the tank division, 1939-40, was imprisoned by the Germans, but escaped to what was then unoccupied France. Here he fought with the maquis, and led the Alsace-Lorraine brigade with the French 1st army in the Vosges, 1944-45. He was then minister of information in the de Gaulle government, 1945-46.

**Malstatt-Burbach**. Industrial suburb lying to the N.W. of Saarbrücken (q.v.), on the right bank of the Saar.

**Malt**. Raw material of the brewer and distiller. It is produced by causing the seed-grains of various cereals, principally barley, to germinate, so converting their albumen into diastase, and their starch into sugar. When the growth has been stopped, the malt

is screened to remove the rootlets or "sprits," which contain about 43 p.c. of digestible carbohydrates and albuminoids. Under the name of malt-culms or malt-combs these are given as a nourishing food to milk-cows and other cattle. See Barley; Distilling; Malting.

**Malta**. A British island of the Mediterranean, awarded the George Cross, 1942, for its service to the British Commonwealth during the Second Great War. It lies 60 m. S. of Sicily and 180 m. from the nearest point on the coast of Africa. An important sea-air base,

it possesses three aerodromes, an up-to-date dockyard, and a fine double harbour on the E., at Valletta. In the First Great War it was an Allied base, in particular of the French fleet; over 100,000 British wounded from Salonica and the Dardanelles passed through its hospitals, and it became known as the nurse of the Mediterranean. For the story of Malta during the Second Great War, see the separate entry following this.

An irregular oval in shape, Malta is 17 m. long by about 9 m. broad, and has an area of 91½ sq. m. Off the N.W. lies the smaller island of Gozo, with an area of 24½ sq. m. Comino and some islets also form part of the colony. Pop. of the islands is 270,000, with a density of 2,520 per sq. m. in Malta, 95 in Gozo. Both islands, composed mainly of limestone, have an irregular and rocky surface. Over

40,000 acres of land are normally under cultivation: the soil, though shallow, is rich in phosphates, which render it fertile. Chief products are potatoes, onions, oranges, grapes and figs, wheat and barley. Goats, pigs, and sheep are reared. It can produce enough food for its pop. for 100 days only. The coastline, except on the S.W., is much indented, the chief bays being, on the N.E., Melleha, St. Paul's, and the double indentation formed by the promontory on which Valletta, the capital, is built; on the S.E., Marsa Scirocco. The climate is mild and healthy in winter, warm in summer.

The principal occupations of the inhabitants are agriculture and services rendered in H.M. dockyard and for the navy, the army, and the R.A.F. The British govt., as the largest employer of labour, keeps Maltese economy functioning. Minor manufactures include beer, lace, cotton, cigarettes, pipes, filigree. Soft limestone, which is cut with axes and of which the houses are built, is the island's only mineral.

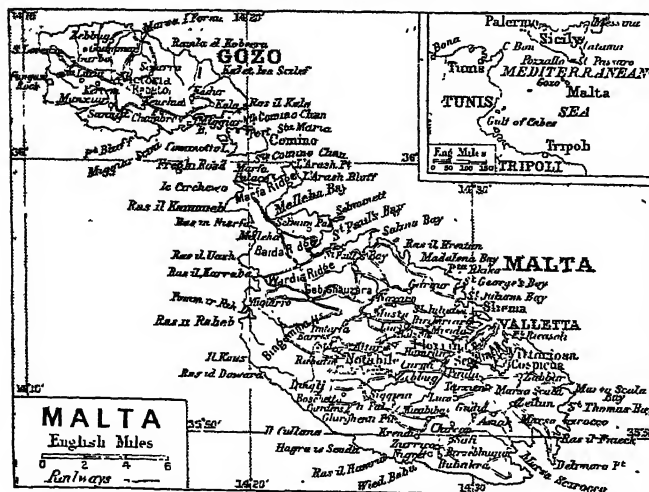
Rainfall averages 18 ins. a year. Water is stored in underground galleries, into which the rain percolates. The supply is inadequate for all needs.

Malta contains some remarkable megalithic sanctuaries (e.g. Hal Tarxien) of the Neolithic period (3rd millennium B.C.), with oriental affinities. These shrines had fallen into disuse before the Maltese Bronze Age (c. 2000 B.C.). Phoenicians reached the island soon after 1000 B.C. and founded towns there in the 8th and 7th cents. In the 6th cent. they were reinforced by settlers from Carthage. The Romans turned the Carthaginians out during the Second Punic war, and the island enjoyed considerable prosperity under Roman rule. St. Paul's Bay is identified as the scene of the shipwreck of the apostle in A.D. 58 (Acts 27).

With the decline of the Roman empire, Malta was ravaged by the Vandals and Goths in the 5th cent. A.D. They were driven out by Belisarius, who attached it to the Byzantine empire. In the 9th cent. the Arabs established themselves here, their control lasting from 870 to 1090. The Maltese language, Phoenician in origin, assimilated Arabic idiom, and has continually absorbed many European, including English, words. In 1090 the Arabs were expelled by Count Roger the Norman with a handful of men, the island thus becoming a dependency of Sicily,



Malta arms



Malta. Map of the islands forming a British territory in the Mediterranean. Inset, map showing position of the islands in relation to Sicily and Africa.

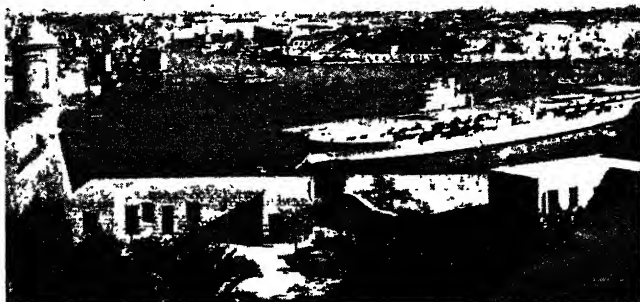


and like Sicily passing by marriage to the house of Hohenstaufen. On the extinction of that house, soon after 1250, Peter king of Aragon secured Malta. The Aragonese kings recognized the privileges of local govt. granted to the island by Count Roger the Norman, and set up a popular council. As a Spanish dependency Malta became part of the inheritance of Charles V and in 1530 that sovereign gave it to the knights of S. John of Jerusalem, who, driven from Rhodes by the Turks, sought a new home. When the Turks laid siege to Malta in May, 1565, it was strenuously defended by the knights, led by their grand master John Parisot de la Valette and assisted by Maltese troops, of whom 6,000 perished. The Turks withdrew on Sept. 8, 1565. On that day in 1945, the armistice signed by Italy on Sept. 3 came into

routes. Malta is also the base of the British Mediterranean fleet.

Under British protection, Malta was governed as a crown colony under the Colonial office with various forms of representative council to assist the governor, that of 1887 being the most liberal. It was replaced in 1900 by a more

to the exclusion of Maltese. From 1934 Maltese became the language of the law courts, and was taught in the university (which has an average of 250 students). Subsequent constitutions under crown colony rule, to which the island had reverted, made English and Maltese the official languages. The



Malta. Fort San Salvatore, a point in the Cottonera Lines (1668), part of the great system of fortifications constructed by the Knights of Malta. Top, Grand Harbour at Valletta, from Kalkara

effect, and the dual victory is now celebrated in Malta on that day, the feast of Our Lady of Victories, which is Malta's national day.

The knights of S. John fortified Malta and built many auberges, palaces, and churches, but in 1798 the effete grand master Hompesch, yielding to the defection of the French knights, surrendered the island to Napoleon without a fight. Three months later the Maltese rose against the French, who in 1800 capitulated to British, Maltese, and Neapolitan forces. In 1814 the treaty of Paris ratified the cession of the Maltese Is. to Great Britain, a cession made at the explicit request of the Maltese people. With the opening of the Suez canal in 1869 Malta became an important coaling station on the great trade route between Great Britain, India, Australia, New Zealand, and the Far East. With the development of air transport, she became a staging post on the empire air

restricted one. At the end of the First Great War, Malta suffered from unrest and mild riots, and in 1921 was granted responsible government under the Amery-Milner constitution, together with a grant in aid of a quarter of a million sterling. There was an elected legislative assembly of 32 members and a senate of 17. Local affairs were the concern of the prime minister and his cabinet, imperial interests and defence being reserved to the crown. Under self-government, education and communications improved and the Maltese language finally supplanted the Italian, which had been imported by Sicilian notaries at the time of the knights. Fascist interference in Malta's domestic affairs in a struggle to Italianise Malta on the part of Mussolini was strongly resisted by the Maltese people and ended in 1933 in the withdrawal of the constitution of 1921, under which Italian and English were the official languages

MacDonald constitution of 1939 created an advisory council of government, consisting of ten elected, two nominated, and eight official members, of which the governor was president; and the governor's executive council included two elected members. This form of govt. functioned throughout the Second Great War. A new constitution, restoring autonomy in local matters, promised in July, 1943, came into effect Sept. 22, 1947. The first parliament under this was opened by the duke of Gloucester, Nov. 10; Labour held 24 out of 40 seats, four parties, including a nationalist pro-Italian party with seven members, sharing the others. The assembly met in the 17th cent. hall of S. Michael and S. George, still standing though damaged by blast from enemy bombs.

The British govt. made a free grant of £10,000,000 to Malta in 1942 to help in the reconstruction of bomb-damaged buildings, and provided food subsidies of £2,000,000 a year during the last stages of the war to keep down the cost of living. Damage to school buildings and increase in pop. halted the effort made to stamp out illiteracy; 55 p.c. of the people are unable to read or write.

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## MALTA IN THE SECOND GREAT WAR

The Hon. M. E. Strickland, Editor, The Times of Malta

*The stubborn and heroic defence put up during 1940-43 by Malta, isolated British island in a hostile Mediterranean, is here vividly described by one who shared in it*

In 1939 there were two schools of thought regarding the strategic value of Malta in the event of a declaration of war by the Axis on Great Britain and France; one, that Malta would be torn from the empire, the other that Malta could and would be defended. The chief protagonist of the second was Lord Strickland, prime minister of Malta and leader of the elected majority in the council of govt.

After the Munich crisis it was decided to strengthen Malta's defences. A.A. guns were dispatched from Great Britain, and the cutting of deep rock shelters in the dockyard area began in 1939. Malta came under the French zone of Mediterranean responsibility, and the air defence was to be supplied from bases at Bizerta.

From Sept., 1939, to June 19, 1940, after the first anxiety as to whether Italy would fight or not was allayed, Malta continued on its peace-time level, save that the fleet had sailed and only submarines remained. Maltese traders imported stocks of wheat, other food, and fuel. Some surface shelters were built.

In May, 1940, Gen. Sir William Dobbie became acting-governor, an appointment confirmed when his predecessor, Gen. Sir Charles Bonham-Carter, was invalided out of the army. On June 8 the Maltese quailing Carlo Mallia broadcast from Rome that he and his friends were coming to liberate their Maltese brothers from the British yoke. A wave of anger swept the island. Anti-Italian demonstrations took place in Valletta, and in the towns and villages. Mussolini's declaration of war at 5 p.m. on the 10th relieved the tension. Malta waited, but not for long. The French air defence she should have had was not there.

### The First Air Attacks

At 6.45 a.m. on June 11 came the first air attack, followed through the day by seven successive waves. The guns blazed back. Anger surmounted fear. Casualties were far fewer than had been anticipated: the solid stone houses stood up to the 500-lb. Italian bombs. Admiral Sir Wilbraham Ford organized the dockyard defence battery. Evacuees poured out from the three dockyard cities to the inland towns and villages. Air attack continued. Malta put

on a stoical mood almost overnight; it was not to yield as the months passed. Four British Gladiators took the air, plunged in among the Italian marauders, and shot some down. One Gladiator was lost. The three others, which became known as Faith, Hope, and Charity, fought on. The A.A. guns, manned by Maltese gunners and gunners from the U.K., also took their toll of the enemy. Aug. brought six Hurricanes as reinforcements from Great Britain, sent despite her own desperate need, for the battle of Britain was on, too. Everyone in Malta began cutting rock shelters in the soft limestone; by the end of 1941 eleven miles of shelters had been cut by hand.

The A.R.P., which had come into being in 1935 during the Abyssinia crisis, when Malta had the first anti-gas school in the empire, functioned well; so did the special constabulary.

### Development of the Battle

In Oct., 1940, military reinforcements for the thinly held beach posts, and additional guns, arrived. Thousands of Maltese volunteered for the King's Own Malta regt. and Royal Malta Artillery. Sir Andrew Cunningham arrived in the Warspite in Dec., after bombarding Valona, and a wave of enthusiasm swept Malta: the navy was back. Mussolini's boast that the Mediterranean was an Italian lake was disproved. In Jan., 1941, the scene changed. In limped the aircraft carrier H.M.S. Illustrious and the damaged destroyer Gallant. The dockyard worked feverishly to repair the Illustrious, the wounded were tended, the dead buried. Then came a new menace in the sirens' wail. Something new happened. The German Stuka dive-bombers were there, swooping in a perfect circle upon the great ship and her protecting land guns. The dust of battle cleared. The battered ship had survived. She survived further attacks and sailed to fight again. But from then on Malta was to know the meaning of war. The 1,500-lb. armour-piercing bombs cut through her stone buildings, the savage air attacks wore on, a slow process of attrition. In May, 1941, the Italians relieved the Germans. Malta was reinforced. Air Vice-Marshal Sir Hugh Lloyd

took command of the R.A.F. Malta-based planes began bombing Naples. At dawn, July 26, 1941, the Italians launched an E-boat attack on the Grand Harbour. Gunners of the R.M.A. shot up the whole of the attacking force of 17. Aircraft finished the job.

The Royal Navy's surface ships were again in and out of Malta and Malta-based submarines were winning laurels. In Dec., 1941, the Germans returned and began a day and night aerial attack which lasted with little respite until May, 1942. On April 15, 1942, King George VI awarded Malta the George Cross. On May 10, 1942, a great victory was won. The air defence had been down to seven planes, but Spitfires were flown in from aircraft carriers and went straight into battle; they and the guns of Malta shot down 63 enemy planes and damaged 31. Before this, the March convoy which the navy had brought in lay wrecked and burning in the harbours. Every village bore its bomb scars.

### Severe Food Shortage

On May 7, 1942, F.M. Viscount Gort relieved Gen. Sir William Dobbie. Devastation reigned in Malta, but it was to be even greater yet, and food was getting short. The British 8th army was thrown back to Mersa Matruh—Malta was still a thousand miles from any friendly land. The last phase of the aerial siege began in earnest. Bread was rationed at 10½ oz. a day, with 1 oz. of corned beef or goats' meat. There was no flour, butter, or coffee, and only 1 oz. of tea a week. One plate of soup was allowed at communal meals, or 1 oz. of corned beef if not drawn at home. There was no milk except for children under three. Gort organized a rigid economy. Livestock was ruthlessly reduced and transport limited. The food resources of Malta and the adjacent islands were pooled for army and civilians as one. The army got 1,750 calories a day, civilians 1,350. By June there was no milk save for babies and nursing mothers and the sick. All restaurants closed on July 14. By Aug. one meal a day was being served to all alike by communal kitchens in every town and village. In June two ships made for Malta from the W. and Malta's scanty harvest from her bomb-cratered fields was coming in. A convoy coming from the E. turned back—its fuel and ammunition had been exhausted before it could reach its goal. Aug. saw the epic convoy reach the island—



1. Bomb smoke over the bastions of Valletta. 2. Homeless inhabitants of Valletta on their terrace after a raid. 3. Typical air raid damage. 4. British coal miners working with Royal Engineers on the excavation of

shelter tunnels; a loaded skip is being pushed away, and an empty one goes for refilling. 5. Flower stall amidst the devastation. 6. Children playing amongst the ruins. 7. Casualties from Italy enter a reception area.

**MALTA: ILLUSTRATING HER INDOMITABLE SPIRIT IN THE SECOND GREAT WAR**

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four-and-a-half ships out of 14 that sailed; they saved the island from defeat. There were two ration periods left when, on Nov. 19, 1942, thanks to the victory of Alamein and the subsequent fall of Tripoli, "bomb alley" was opened in the E. and four ships made Malta unmolested. The siege was raised, for these ships were the first of a stream of 53 which arrived within two months. The first substantial increase in rations was on Jan. 21, 1943. Customers at communal kitchens decreased from 205,000 to 20,000 in Nov., 1942.

Throughout this period Malta-based aircraft and submarines continued to attack Axis transport carrying supplies for the Afrika Korps; their success deprived Rommel of much needed oil and petrol, men and munitions. The maintenance of Malta's own diminishing supplies of vital essentials was assisted by consignments from submarines and bombers.

#### Renewal of Air Attack

On Oct. 4, 1942, the 3,000th alert heralded a renewal of the air attack. By the 18th, 119 enemy aircraft had been destroyed by the R.A.F. for the loss of 27 Spitfires, 14 pilots being saved; 14,000 sorties were flown by the enemy, but Air Marshal Sir Keith Park used the tactics of offence by which the battle of Britain had been won. He had only a few days' petrol left when the enemy called off the attack, and Malta's guns would again have been without assistance and short of ammunition. With relief the garrison and people of Malta tightened their belts to continue the fast which bombing was rendering intolerable. Firewood from the damaged houses kept the victory kitchens in fuel. Nineteenths of the population were dependent on the communal daily meal provided by them.

On Oct. 23 the Eighth Army opened its offensive at Alamein. On Nov. 8, U.S. and British forces landed in Morocco and Algeria. Nov. 19 saw the death sentence on Carmel Borg Pisani for treason; he had landed in Malta from Italy in Aug., was arrested and tried by a Maltese civil court.

Among some 120 Maltese arrested when Italy entered the war were Dr. E. Mizzi, leader of the Nationalist party and the former chief justice Sir A. Mercieca. They were later, with the consent of the council of government, deported to Uganda for the rest of the war.

On Dec. 11, Malta's aircraft joined in the Tunisian battle, making an onslaught on enemy air

transports. On March 24, 1943, Malta saw its first balloon barrage and began to prepare for the invasion of Sicily. On June 20, 1943, the king arrived at his George Cross island on board H.M.S. Aurora; he received a tumultuous welcome.

In July Malta was crowded with men and supplies. Eisenhower, Cunningham, Montgomery, and Alexander had their H.Q. in Malta, deep in her rock shelters, before invading Sicily. Malta's armada joined the thousand other ships that sailed to reach Sicily on July 10, 1943. Malta's aerodromes provided the base for the R.A.F. fighter cover for this first invasion of Axis Europe. Malta had vindicated her stand, the armed forces had their reward for the sacrifices made in her defence. Malta's story is well summed up in Gen. Eisenhower's statement to Lord Gort published in *The Times* of Malta, Aug. 5, 1943: "The epic of Malta is symbolic of the experience of the United Nations in this war. Malta has passed successively through the stages of woeful unpreparedness, tenacious endurance, intensive preparation, and the initiation of a fierce offensive. It is resolutely determined to maintain a rising crescendo of attack until the whole task is complete. For this inspiring example the United Nations will be forever indebted to F.M. Lord Gort, the fighting services under his command, and to every citizen of the heroic island."

The *Times* of Malta, the Sunday *Times* of Malta, and *Il-Berqa* maintained unbroken publication throughout the aerial battle and the long siege.

#### The Price of Victory

Casualty figures were: civilians, June 11, 1940, to Dec., 1943: killed 1,190 (including 404 children), died of wounds 296, missing 54, seriously injured 1,846, slightly injured 1,932. The fatality rate represented 5.7 per thousand pop.

10,400 houses were demolished, 18,000 partly damaged, 48 churches damaged or destroyed; the church of S. Mary of Damascus, 1576, was obliterated, and the oldest part of the palace of the grand master of the Order of S. John, begun 1574, was destroyed.

In 1942 the death rate exceeded the birth rate (by 1,835) for the first time since 1799. In the spring of 1943 an epidemic of infantile paralysis swept the island. Malta, apart from Gozo, had 375 cases. In Aug., 1943, a typhoid epidemic broke out, the result of dislocation of drainage by bombing. Of some 1,000 cases, 100 were fatal.

Military casualties: army, Maltese and U.K., under 300; naval, under 200; R.A.F., about 80. Casualties in the navy and merchant navy ships that fought through to Malta were over 2,000.

Axis planes destroyed from June, 1940, to July, 1943: 1,237; 236 were shot down by gunners, 1,001 by the R.A.F. Alerts, 3,343; 16,500 tons of bombs were dropped on Malta.

There were approx. 15,000 Maltese in the army and an equal number of troops from the United Kingdom forming the garrison. Conscription was agreed to in 1941. Over 4,000 Maltese served in the Royal Navy and merchant navy, and over 1,000 in the R.A.F.

After the raising of the siege, from Dec., 1942, to April, 1943, planes based on Malta destroyed 216 rly. engines, eight in Tunis, the remainder in Italy and Sicily. Submarines based on Malta sank 1½ million tons of Axis shipping during the war, and three V.C.s were won by men of Malta-based submarines.

**Malta, KNIGHTS OF.** Name sometimes given to the knights of the order of S. John of Jerusalem, during the period 1530-1798, when they ruled Malta. Once established in the island, they continued their martial career. They helped Charles V in his campaign in N. Africa, but soon their whole energies were occupied in defending the island from a great Turkish attack. The knights took their galleys, in 1571, to fight at Lepanto.

In the 17th century the knights were constantly at war, but the order soon began to lose ground. They helped to defend Candia against the Turks and fought under John Sobieski in Hungary. They warred, too, against Venice. In the 18th century one or two of the grand masters made spasmodic attempts to restore the power of the order. The knights lost Malta in 1798, when the grand master, Ferdinand von Hompesch, surrendered it almost without a struggle to France. Many of the buildings erected by them were damaged or destroyed by enemy bombing from the air during the Second Great War. Part of the palace of the grand masters at Valletta survived, but the oldest portion, dating from 1574, was destroyed, and the marble staircase was damaged. See *Knighthood*; *Malta*; consult also *The House of the Temple*, F. W. Ryan, 1930.

**Malta Artillery, ROYAL.** Regiment of the British army. Formed in 1802 as the Malta Coast Artil-

lery, it assumed its present title in 1889. All ranks are Maltese, and during the Second Great War the regiment earned distinction for its work in the A.A. artillery defence of the island. In 1940 King George VI became col.-in-chief of the unit.

**Malta Fever.** This term is a misnomer for Undulant Fever (*q.v.*).

**Maltese Cross.** Badge of the order of the knights of Malta. This is a development of the cross pattée or formée, the limbs expanding in thickness towards the ends. In the Maltese Cross each extremity is indented, so that it is sometimes known as the cross of eight points. See Cross.

**Maltese Terrier.** Name of an ancient breed of lap-dog. Superficially it resembles a toy Skye terrier, but in fact it is not a terrier. In colour it is pure white, occasionally marked with fawn. The long hair that covers the face and sides is of a very fine silky character. The tail is very short, but, carrying an extensive plume of hairs, appears large, and is usually curved over the back. The dog is of a very affectionate disposition, loyal to its owner, and displays remarkable intelligence, alertness, and good temper. It is no longer bred in the island of Malta. See Dog.

**Malthus, THOMAS ROBERT** (1768-1834). British economist. Born near Dorking, Surrey, Feb.



17, 1766, and educated by private tutors, he went to Jesus College, Cambridge, where he became a fellow. He was ordained and held a curacy for a time, but soon gave his attention to political economy, which was to be his life study. The work by which he is best remembered, his *Essay on Population*, was first published in 1798 by way of reply to Godwin's *Enquirer*, 1797, and met with fierce criticism. His theory (*v.i.*), suggested, perhaps, by Hume's *Essay on the Populousness of Ancient Nations*, was attacked afterwards by Karl Marx in his *Capital*, and by other writers.

In 1799 Malthus made a tour through Scandinavia and Russia in search of information, and in 1802 visited France and Switzerland. The new edition of his *Essay*, 1803, was virtually rewritten, and in it he acknowledged the effects of prudence as a check

on population, which in the first edition had only been implied. In 1805 he was appointed professor of political economy at the East India College, Haileybury, and here he passed his remaining years except for short intervals of travel. He was elected F.R.S. in 1819. He wrote *Political Economy*, 1820, and other works, and died Dec. 23, 1834. See Malthus and His Work, J. Bonar, 1885.

**Malthusianism.** Theory of population expounded by T. R. Malthus (*v.s.*). It became almost identified — wrongly — with the views and principles of those who advocate small populations and birth control. Malthus, in his



Maltese Terrier. Champion specimen of this breed of lap-dog

*Essay on the Principles of Population as it Affects the Future Improvement of Society*, 1798, challenged Rousseau's theory of the "perfectibility of society" by pointing out that the natural tendency of population was to increase faster than the means of subsistence. Directly or indirectly, therefore, the size of a population was, he held, controlled by want and its attendant miseries.

In essence, this view has never been seriously controverted; and it is certainly not incompatible with the great rise of populations which kept pace with growing industrialisation and increase in scientific knowledge during the 19th century. Malthus's law, however, is not the only one governing changes in size of population, such changes are influenced by many considerations.

The views of Malthus, though by no means original, were a shock to the orthodox opinion of his day; and he was also much misunderstood. Later he was acclaimed as an inspired prophet by the advocates of contraception. Malthus himself, however, advocated only "moral restraint"; and there is good reason to think that he would have been shocked at the practice of contraception by mechanical means.

Malthus's great contribution to scientific thought was indirect. It was his *Essay on Population* which inspired both Darwin and Wallace to produce the theory of evolution: if population presses upon subsistence, they argued, then the individuals which survive to breed will be the fittest — hence the origin of species and natural selection.

**Malting.** Term for the conversion of cereal grains or other seeds into a dry, friable condition, the product being known as malt. Long experience has proved to the brewer that barley best serves his purpose, and much care is given to the growth and harvesting of malting barley in California, India, Great Britain, and elsewhere.

The barleycorn includes a small germ at the lower end which would, in normal conditions, develop into a new plant; behind and above this is the main bulk of the corn composed of a hard network of cellulose enclosing many millions of starch grains, known as the endosperm, and surrounded by a thin layer of cells containing grains of protein, the whole seed being enclosed in a chaffy covering or husk.

As harvested, barley requires a certain resting period before germination can begin, and a longer period before it is fully matured. Maturity can be accelerated by a process known as sweating, in which the barley is heated on a kiln to 100° or 110° F., with occasional turning, for about 30 hrs. This treatment eliminates excess of moisture, and full maturity is attained a few weeks later. Since the moisture content at this stage is about 12 p.c. the barley can be stored without deterioration for a long time.

The maltster screens barley to remove such foreign matter as other seeds, stones, and dust. The barley is then steeped in water to remove some of the remaining extraneous matter by flotation. Two or three changes of water are used in steeping which lasts for 50-100 hrs.; the grain absorbs a considerable weight of water, and the excess is run off.

The wet barley is spread out upon the malting floor in a layer a few ins. thick, known as the couch. This begins to germinate, each corn producing a few rootlets, the shoot, or acrospire, growing up beneath the husk. The respiration of the growing seed produces heat, and to keep the temp. down the mass is turned at intervals either by hand or by a



mechanical plough. During this process various enzymes are formed; one, the *cytase*, acts upon the hard interior network or cellulose, breaking it down and rendering the enclosed starch accessible in the mashing procedure. At the same time some of the insoluble protein is attacked by proteolytic enzyme and converted into simpler soluble compounds.

When the shoots are about three-quarters the length of the corn (in 9-12 days), the thickness of the couch is increased, and it is then left to wither for a day or more, when the rootlets begin to shrink and develop a little colour. The product now contains about 40 p.c. of water and is known as "green malt." The green malt is spread in a thin layer upon the perforated floor of a kiln, and a current of warm air heated by a fire beneath is passed through it for one or two days during which it is frequently forked and turned until the mass becomes what the maltster calls hand-dry.

The next process, curing, involves reducing the supply of air and allowing the temp. to rise gradually to about 200° F., when the moisture is still further reduced, the enzyme diastase is partly destroyed, and the malt develops colour and a pleasant biscuity flavour. For pale ales, the colour of the malt is increased only slightly, for mild ales or stouts it must be darker. When unloaded from the kiln the malt contains about one p.c. of moisture and is allowed to cool before being removed to storage.

This traditional flooring method of preparing malt is still used; but various forms of plant have been designed. In some the

germination takes place in large boxes (Saladin method), in others in revolving metal drums (Kropff, etc.), in which temp., aeration, humidity, etc., are easily controlled. The malt produced in these plants is no better than that grown by the older method; but less floor space is required, malting can be carried out at any time of year, and with less manual labour.

By the use of higher curing temps. amber and brown malts are obtained, the latter usually by roasting over an oak-wood fire. Crystal malt is prepared by heating green malt to 160° F. when the interior of the corns liquefies, after which the temp. is raised until the desired colour is produced. On cooling, the liquid interior solidifies to a brown crystal-like mass of characteristic flavour. The darkest variety, black malt, is made by roasting ordinary kilned malt in a revolving drum over a series of gas flames, after which it is rapidly cooled with a water spray to prevent spontaneous combustion.

Malt usually contains more diastase than is necessary to convert the whole of its starch into sugar in the mash tun. It is therefore sometimes desirable to add unmalted starch-containing materials to the grist, especially if the malts used have a high nitrogen content. The principal materials in the U.K. in normal times are thin flakes of maize and rice, produced by removing the husks, germ, etc., and heating the remainder with water to form a paste. Other materials—potatoes, rye, raw barley, etc.—have been tried, but without much success. See Brewing.

**Malton.** A market town and urban dist. of Yorkshire (N.R.). It stands on the Derwent, 18 m. to N.E. of York, and is served by rly. It consists of Old and New Malton, while across the Derwent is the sister town of Norton, which is in the East Riding. The chief buildings include three churches, S. Michael's, S. Leonard's, and S. Mary's, all containing Norman work. S. Mary's was the church of a priory here. The chief industries are tanning, brewing, and milling, and the making of agricultural implements. Malton is also a centre for horse-breeding. Near is Castle Howard. In early Saxon times Malton was

the residence of the kings of Northumberland, becoming a town soon after 1066 and having a castle. From 1640 to 1885 it was represented in parliament. Its rights as a borough were lost in 1684. In 1854 a local board was established, and in 1894 it became an urban dist. Market day, Sat. Pop. 4,300.

**Maltose.** Sugar prepared by the action of malt upon starch. It was at first mistaken for dextrose, but its true nature was pointed out by A. P. Dubrunfaut, who gave it the name maltose. To prepare it starch is mixed with water, and heated on a water-bath until it gelatinises. To this is added the crushed malt, and the mixture kept warm for an hour to enable the enzyme of the malt (diastase) to hydrolyse the starch into maltose and dextrin. These two substances are separated by means of alcohol, which dissolves the maltose, leaving the dextrin as a residue. Maltose crystallises in fine needles, and when boiled with dilute sulphuric acid is decomposed into grape sugar.

**Malvaceae.** Family of herbs, shrubs, and trees. Natives of all temperate and tropical regions, they have alternate leaves, and the sepals are united to form a five-lobed calyx. There are five petals, and numerous stamens and styles. The calyx has often an outer false calyx (*epicalyx*) formed of united bracts. Many of the species yield fibres, and all are mucilaginous. Among the genera are *Althaea* (marsh mallow), *Gossypium* (cotton), *Hibiscus*, *Malva* (mallow), etc. See Fruit; Hollyhook; Mallow.

**Málván.** A subdivision and town of Bombay state, India, in the Ratnágiri dist. The subdivision lies along the coast, and Málván Bay affords a safe anchorage for coasting vessels. The town has the chief harbour on the bay, and is 70 m. S. of Ratnágiri. It was formerly a stronghold of Mahratta pirates, who were extirpated in 1812. In that year Málván was ceded to the British government by the raja of Kolhapur. Area, 238 sq. m. Pop. subdiv., 124,410; town, 25,677.

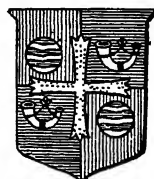
**Malvern.** Name used for Great Malvern, an inland watering-place, urban dist., and cultural centre of Worcestershire, England, and also for a number of other places on the Malvern Hills, all visited for health and pleasure.



Malton, Yorkshire. West front of S. Mary's, or the Priory Church of Old Malton  
Valentine



Malton arms



Malvern arms



These include Little Malvern, Malvern Link, Malvern Wells, West Malvern, and North Malvern.

Great Malvern, which is 128 m. from London and 9 m. from Worcester, has a rly. station. Its chief building is the beautiful cruciform church, that once belonged to the priory. This was founded in the 11th century, and there are remains of the refectory. Mainly Perpendicular, this has a Norman nave, and is noted for its glass. Of the springs the chief is St. Ann's Well. Malvern votes in the co. constituency of S. Worcs. Pop. 22,778.

**Malvern College.** An English public school at Malvern, Worcestershire. Founded in 1862, it was opened in 1865 as a Church of England school with a system modelled upon that of Winchester. Its 500 boys live in ten houses, and there are a small number of



Malvern, Worcestershire. The cruciform Priory Church from the N.E.

**Malvern Hills.** Range of hills in England. It extends for about 9 m., mainly N. and S., between

Worcestershire and Herefordshire. The highest points are Worcestershire Beacon and Herefordshire Beacon, both nearly 1,400 ft. high. From the former 15 counties can be seen. Other heights include North Hill, Holly bush Hill, Sugarloaf Hill, Swinyard Hill, Midsummer Hill, and Gloucester Beacon. The

district is called Malvern Chase. It was disafforested in the 17th century. The Malvern Hills Act, 1924, was designed to preserve various beauty spots here. On Herefordshire Beacon are remains of a British camp.

**Malvernian.** In geology, a group of Pre-Cambrian rocks which form the main ridge of the Malvern Hills (*v.s.*). Probably the rocks were originally sediments, tuffs, and volcanics of fairly basic composition. Later they were rendered gneissic by metamorphism accompanied by permeation by granitic fluids. The resulting rocks are now of variable character, which can be graded from basic amphibolites to acid granites. See Metamorphism; Pre-Cambrian.



Malvern College. School Buildings, with chapel on the left, from the cricket ground

day boys. It is divided into classical and modern sides, and has a school of engineering.

**Malvern Festival.** Founded by Sir Barry Jackson and Roy Lambert in 1929, this dramatic festival was held at Malvern each summer until 1939. On Jackson's retirement in 1938, control was assumed by Lambert, who nominated Sir Cedric Hardwicke as associate director. Sixty-five plays by some 40 dramatists were given in the 11 seasons, six specially written by Bernard Shaw: *The Apple Cart*, *Too True to be Good*, *The Simpleton of the Unexpected Isles*, *On the Rocks*, *The Millionairess*, and *Geneva*. Many 17th century plays were revived, including Southerne's *Oroonoko*, Jonson's *Volpone*, and Dryden's *All for Love*. The festival was revived in 1949.

**Malvery, OLIVE CHRISTIAN** (d. 1914). British author and social worker, known also under her married name of Mrs. Archibald MacKirdy. Her first book, *The Soul Market*, 1906, was followed in 1907 by *Baby Toilers*, an investigation into the conditions of children in industrial life. Later works included *A Year and a Day*, a record of investigations into the employment of women, 1912; and, in collaboration with W. N. Willis, *The White Slave Market*, 1912. Her work on behalf of homeless women and girls led to the establishment of homes in London and the provinces, she herself founding two which she presented to the Church Army and Salvation Army. She died Oct. 29, 1914.

**Malvolio.** Character in Shakespeare's *Twelfth Night*. Steward

to the Countess Olivia, he becomes by reason of his petty persecution the butt of Sir Toby Belch and his bibulous cronies. They trick Malvolio into making a fool of himself by appearing before his mistress in yellow stockings, and cross-gartered. It is to him that Sir Toby exclaims: "Dost thou think, because thou art virtuous, there shall be no more cakes and ale?" and in the fabricated letter to him appear the



Malvolio, in the fantastic dress with which he hopes to win the heart of the Countess Olivia

words: "Some are born great; some achieve greatness; and some have greatness thrust upon them."

**Malwa.** Historically, a tract of Central India, lying N. of the Vindhya range and drained by the Mahi river. It was annexed to the Mogul empire by Akbar in 1562, and later fell to the Mahrattas and so to the British until 1947. The name was given in 1948 to a union of 20 formerly independent states, later commonly known as Madhya Bharat (*q.v.*). Malwa's chief crops are food grains, while wheat, hemp, and sugar-cane are grown, but the opium supply has ceased. Dhar, Ratlam, and Ujjain are important places. Area of Malwa, 2,727 sq. m. Pop. approx. 390,000.

**Mamba.** Slender snake inhabiting Central, E., and S. Africa. It attains a length of 10 ft. and, with the possible exception of the hamadryad, is the deadliest of all snakes. There are two varieties, one black which seldom leaves the ground, while the green mamba often lies entwined in the branches of trees overhanging paths and will bite natives on the head and shoulders as they pass. The bite is usually fatal within a few hours.

**Mamelukes** (Arab., slaves). Military class of foreign origin in medieval and modern Egypt, to which they gave a number of sul-

tans. In the 13th century the Seljuk Turks, whose greatest chief had been the sultan Saladin, were masters of Egypt and W. Asia. It was a Turkish custom to carry off boys from conquered territories as slaves, and to train them as military bodyguards for the sultans.

Such a bodyguard of white slaves or Mamluks was formed in Egypt. The Mamelukes became an invaluable fighting force; their leaders were taken from their own ranks, and in 1250 their commander, Kutuz, overturned the government and made himself sultan of Egypt. Ten years later another Mameluke captain, Beibars (*q.v.*), slew Kutuz and seized the sultanate. From this time the Mamelukes were masters of Egypt and ruled until the conquest by the Ottoman Turks in 1517. The series is divided into two groups, the Turkish (1250-1390) and the Circassian (1390-1517). The succession of each sultan was usually secured by the violent death of his predecessor. Lesser Mameluke chiefs ruled the provinces under a kind of feudal system.

The Mameluke sultans were, on the whole, able rulers, and raised Egypt to great prosperity. They were also great patrons of literature, architecture, and other arts. After the Ottoman conquest, Egypt was officially placed under a Turkish pasha, but virtually under Mameluke beys, who controlled the several provinces. The army overthrown in Egypt by Bonaparte, 1798, was a Mameluke force. They were exterminated or expelled by the pasha Mehemet Ali in 1811. See Egypt.

**Mamers.** Town of France. In the dept. of Sarthe, it lies 28 m. N.N.E. of Le Mans, with which it has rly. communication, and is a junction on the Ouest line. There are cloth and leather industries, printing works, and sawmills. The church of S. Nicholas dates from the 13th-15th centuries, with Renaissance additions.

**Mamertine Prison** (from Mamers, a form of the name Mars). Alternative name, of medieval origin, for the Tullianum (*q.v.*), the subterranean prison of ancient Rome on the Capitoline hill.

**Mammal** (Lat. *mamma*, breast). Name given to the class of vertebrate animals which suckle their young. Some time when coal was still being laid down by the overwhelming of great forests, the Amphibia (*q.v.*), the first vertebrates to conquer the land, gave rise to two separate lines of descendants which differed from amphibia and

from each other. Both of these lines, together with the amphibians, are represented by animals alive today. One line consisted of ordinary reptiles, related to, and in many ways like, living reptiles. Some of these had, there is every reason to think, four-chambered hearts derived from the amphibian three-chambered heart by complicated but explicable steps. The other line consisted of reptiles, too, but they were very different. They almost certainly had four-chambered hearts, which, however, could not possibly be derived by the same steps from the amphibian three-chambered heart. These reptiles are generally called the theromorph, or beastlike, reptiles, the implication being that they were the true ancestors of the mammals. Through the Permian, the Triassic, and the Jurassic they formed a relatively tiny group numerically. They were small animals, active, and of rapidly growing intelligence.

#### The Dominant Group

At the end of the Cretaceous period this group stepped into the place of the ordinary reptiles, most forms of which met disaster for some obscure reason at this time. Through the Cainozoic period, up to the present day, they have remained easily the dominant group. They have produced a number of lines of highly successful and very specialised forms, and at the same time there have remained lines of primitive, relatively unspecialised, mammals, such as the hedgehog, which probably resemble in many ways the earliest creatures which could fairly be called mammals.

Perhaps the most important single step taken by the evolving line of mammals was the acquisition of a mechanism for stabilising their internal temp. By burning their food at a slow rate, all animals inevitably produce some heat. The mammals have a metabolism so balanced as to give considerable amounts of heat even when relatively little active work is being done. Great exertion generates relatively great amounts of heat. This necessitates some cooling mechanism. Heat is lost, in these circumstances, through evaporation at surfaces, particularly through the evaporation of sweat. Large mammals, in which the ratio of volume to surface is high, are confronted with a serious problem in keeping cool, small mammals with an equally serious problem in keeping warm. Mice do not live in arctic conditions. The arctic fox is probably near the lower limit of

practicable size for such regions. At a relatively constant internal temp. of about 37° C., the mammals can develop very precise chemical mechanisms of all kinds to mediate their precise and elaborate lives. Such precision and such elaboration would be impossible in conditions of wildly varying temp.

The other vital step in the evolution of the mammals was the retention of the developing embryo within the mother's body for an increasing time. This made possible an elaboration of the brain in circumstances where the individual was safe from competition with all but its litter-mates. Subsequent maternal solicitude and provision of milk enabled the young to survive bearing a brain, scarcely functional and at that age a handicap, but destined at maturity to give its owner a decisive advantage in the struggle for existence against stronger but stupider rivals.

These two things, control of temp. and maternal nourishment of the young, have been made possible in the mammals by the development of those particular structures which distinguish the group: hair, sweat, and those modified sweat glands which provide milk.

#### Hair and Keratin

Hair (*q.v.*) is a special local manifestation of the capacity found all over the skins of mammals, and many other animals, to produce a horny substance called keratin (*q.v.*). Its production at the walls and the tip of a little nodule sunk in a pit at a very much higher rate than elsewhere leads to the production of a hollow, dead tube of keratin, perpetually elongating, at varying rates, by the accretion of new keratin at the base. In this keratin there is often included a colouring matter called melanin, varying in tone from straw colour to black. The huge number of hairs on the skin of most mammals provides an efficient mechanism for the conservation of heat.

Sweat is produced by glands distributed unevenly over the bodies of most, but not all, mammals. It helps in the removal of some waste products, and its evaporation leads to a great loss of heat. For this reason its controlled production plays a very important complementary part to that of hair in the regulation of temp. Further, sweat, in man for instance, where the hair is so much reduced, contains substances which absorb much of the radiation from the sun over a range of wavelengths which is most harmful in

producing sunburn, so that sufficient sweat is a protection.

The number of groups of sweat glands modified to produce milk is not constant from species to species, varying from a normal of two in man to a dozen or more in a sow. Even in man the number two is not constant. The condition of polymastia (many breastedness) is not uncommon. Tradition holds that Anne Boleyn had more than the usual complement; which fact is said to have fascinated Henry VIII with profound historical consequences. Any sweat gland, in either sex, seems able exceptionally to develop into a milk gland, and the removal of such unwanted formations is a part of surgical practice. The secretion of milk consists in the breakdown of the walls of the gland, built up during pregnancy and replenished during lactation.

#### Reproductive System

Associated with the retention of the embryo within the mother (a specialisation by no means confined to this group) we find, in the mammals, a profound modification of the vertebrate urino-genital system in both sexes. To ensure the meeting of sperm and egg (see Fertilisation) an intromittent organ is developed in the male to deliver the semen, consisting of sperms in a medium supplied partially by the prostate gland (*q.v.*), into or at the entrance of, the uterus, which is a part of the ordinary vertebrate oviduct modified to provide a suitable environment for the development of the embryo. To ensure that the female system shall interact correctly in time with the male system many mammals have retained a primitive response to the changing seasons, and breed at a season when both sexes are properly attuned to it.

The condition of being ready to breed is mediated by the secretions of the pituitary (*q.v.*), and, particularly in the female, an enormously complicated system of hormonal control has grown up, taking its time from the pituitary, to ensure that all the parts of the reproductive system, including the milk glands, act harmoniously and in step, so that, for instance, the expulsion of the embryo coincides in time with the production of milk. (See also Hormones; Menstruation, etc.)

Since teeth are extremely durable, it is from their teeth that many early mammalian forms are known as fossils. In the Jurassic the best authenticated mammals had three cusps to their grinding

teeth, and are called the Trituberculata from this quality. A number of unsuccessful groups branched off, some with many cusps, and by the beginning of the Cretaceous three groups are fairly clearly to be made out: (1) the ancestors of the duck-billed platypus and its allies; (2) the ancestors of the kangaroos and their allies; (3) the ancestors of the familiar mammals.

These three groups are made up today as follows:

**THE SUB-CLASS MONOTREMATA.** Here, as the name implies, the openings of the urino-genital system and of the rectum occur at the bottom of a single common depression. The duck-billed platypus (*Ornithorhynchus*) and the Australian spiny anteater (*Echidna*) lay eggs which are fertilised internally and develop a little before being laid. When laid they are placed by the mother in a ventral pouch where development is completed, the young animal being nourished by milk secreted by milk glands to which the embryo becomes closely attached. The sub-class is Australasian.

**THE SUB-CLASS DITREMATA.** Here, as the name implies, the openings of the urino-genital system and of the rectum are separate. In the sub-class there are two grades: (a) The Marsupialia (Australasian and American), in which the young are born very immature, are protected by the mother in a pouch or marsupium, and are fed by milk glands. Here are the kangaroos, opossums, bandicoots, phalangers, and their allies. (b) The Placentalia. In this group the embryo develops far more fully before being expelled from the uterus, and after birth the young are not protected in a marsupium. They are nourished, for a long time in some cases, with milk from the mother, who protects them from attack. The placenta (*q.v.*) permits the passage of nourishment, hormones, antibodies, and oxygen from the mother to the embryo and the passage of waste products, hormones, and antibodies from the embryo to the mother. This passage is via the blood streams of the two, which, however, never mix; diffusion takes place through thin membranes separating them.

In living or recently extinct placental mammals the following orders are commonly recognized:

(i) *Insectivora* including the hedgehogs, moles, and shrews. These are in many ways perhaps the most primitive of living mammals. The brain is very little more

developed than in some reptiles, being smooth and not convoluted.

(ii) *Cheiroptera*: the bats. Here the hand is modified for flight.

(iii) *Rodentia*, or gnawing animals, such as the rabbit, the rat, beavers, porcupines, and others.

(iv) *Carnivora*, or flesh-eaters. Here are the dogs, cats, wolves, tigers, weasels, bears, and seals. All have teeth more or less specialised for their diet of flesh. Many have developed great speed and strength for killing their prey.

(v) *Artiodactyla*, or hooved animals with even numbers of toes. Here are the cows, camels, pigs, deer, and sheep. Many of these animals chew the cud. Many run very fast. They frequently live in herds for mutual protection against the carnivores. Many of the males develop great strength.

(vi) *Cetacea*: the whales, in which the limbs are reduced and the animals have taken on a secondary fish-like shape.

(vii) *Perissodactyla*, or hooved animals with odd numbers of toes, such as the horse and the rhinoceros. These do not chew the cud, but have developed very great strength and speed as a protection against the carnivores.

(viii) *Proboscidea*, elephants.

(ix) *Sirenia*: the sea-cows. Here are the dugong and the manatee (*q.v.*), and the recently extinct huge *Stella's Sea Cow (q.v.)*.

(x) *Hyracoida*, e.g., Hyrax, the true coney of Scripture.

(xi) *Edentata*: a confused group, almost certainly not a true order. Here are the anteaters, the sloths, and the armadillo.

(xii) *Dermoptera*, the cobago or so-called flying lemur.

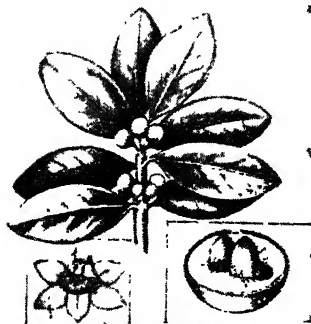
(xiii) *Primates*. Here are the true lemurs, the tarsoids, the Old and New World monkeys, the great apes, and man.

Further details may be found under the heading of any of these orders or of the animals mentioned as belonging to them.

Paul G. 'Espinasse

**Bibliography.** There are no up-to-date books dealing with the evolution and structure of mammals exclusively, but the older textbooks, written before much that is now known was discovered, are out-moded. The following books provide classifications and, in their bibliographies, an introduction to the more advanced study of the mammals: *Vertebrate Zoology*, G. R. de Beer, 1928; *Studies in the Structure and Development of Vertebrates*, E. S. Goodrich, 1930; *Early Forerunners of Man*, W. E. Le Gros Clark, 1934; *Tempo and Mode in Evolution*, Simpson, 1944; *Mammals of Nevada*, Hall, 1946.

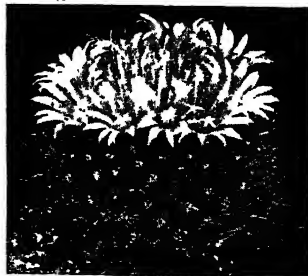
**Mammee Apple** (*Mammea americana*). A large tree of the family Guttiferaceae. It is a native



Mammee Apple. Foliage and fruit. Inset, left, flower; right, single fruit

of tropical America. It has large opposite, oval, leathery leaves, and sweet-scented showy white flowers, from which the aromatic *liqueur eau de Créole* is distilled. The yellow fruit is three or four ins. across, and within the bitter rind it contains a sweet, edible flesh. The large seeds are used medicinally, and a resin obtained from the bark is used to rid the feet of chigoes. It is sometimes called S. Domingo apricot, and derives its name from the Haitian name of the fruit, *mamey*.

**Mammillaria.** Large genus of succulent perennials of the family Cactaceae. They are natives of the warmer regions of America,



Mammillaria. Stem and flowers of this type of cactus

especially Mexico. They have stems of cylindrical or globular form, studded with spirally arranged tubercles, which bear radiating spines and rose, white, or yellow flowers. These are followed by scarlet berry-like fruits.

**Mammon** (Aramaic *mamona*, riches). Phoenician term for gain. In the N.T. it implies love of money and deceitful wealth (Matt. 6, v. 24; Luke 16, vv. 9 and 13). The Book of Enoch, 62, v. 10, has the expression, mammon of unrighteousness, a later equivalent of which is filthy lucre. Milton, Pope, Byron, and Hood use the word, which is spelt Mammon in the R.V., as a proper name. In Jonson's play, *The Alchemist*, the character Sir Epicure Mammon is a luxurious seeker after boundless wealth. Carlyle uses Mammonism, and Tennyson Mammonite.



**Mammoth** (*Elephas primigenius*). Extinct elephant occurring in all N. continents. An inhabitant of central Europe in the Pleistocene period when the North Sea was covered by forest land, its remains have also been found throughout Asia and in N. America, whither it probably migrated. From fossil teeth and bones dredged from the North Sea, and from complete animals entombed in the ice, the whole

structure and general habits of mammoths have been ascertained. Despite the name, the average mammoth did not greatly exceed in size the African elephant of today, the largest mammoth discovered standing 13 ft. in height.

Generally closely resembling the Indian elephant, the mammoth had long and slender tusks which curled upwards and outwards, and was covered with long hair and a thick, woolly under-fur, these two characteristics differentiating it from the modern elephant. The animal was once very numerous. The disappearance of the pine forests, on the leaves and undergrowth of which it fed, led to the mammoth's extinction. Its fossil remains in Siberia supply large quantities of valuable ivory. One intact specimen discovered there had tusks 8 ft. long. Fragments of the limb bones of a mammoth were discovered in Regent Street, London, in 1921. Drawings of the mammoth, engraved on ivory by Palaeolithic cave-men, have been found in S. France. See Elephant; Ice Age; Mastodon.

**Mammoth Cave.** Limestone cavern in Edmondson co., Kentucky, U.S.A., about 85 m. by rly. S. by W. of Louisville. Mammoth Cave national park, 50,548 acres, and including a series of caverns, was created in 1936. Cave formations of St. Louis limestone and



Mammoth. Mounted specimen of Siberian mammoth, found preserved in the Arctic ice, now in the Leningrad Zoological Museum. Top, left (by courtesy of American Museum of Natural History), skeleton of Columbian mammoth, 10 ft. 6 ins. high at the shoulders, found in Indiana

Chester sandstone cover 8,000 sq. m. in central Kentucky, N. Tennessee, and S. Indiana. The surface area above Mammoth Cave is 10 m. in diam., but the length of the underground caverns, passages, etc., which are at five different levels, is 150 m. Colossal Cave, also in Edmondson co., is

almost the equal of Mammoth. The three rivers, two lakes, a sea, and many streams and pools link up with the Green river which passes by. Reverberations along the walls of the  $\frac{3}{4}$ -m. long Echo river continue for 10-30 secs. The Main Cave is 40-300 ft. wide, reaches a height of 125 ft., and extends for 4 m. Indian councils were once held in chief city or temple, a part of the Main Cave which is 541 ft. long, 287 ft. wide, and 125 ft. high. Many mummies have been found. The cave, through which boat trips are conducted, has been so commercialised that meals are served in its banquet hall, and weddings are solemnised at its bridal altar.

Many of the avenues are covered by a remarkable variety



Mammoth Cave, Kentucky. Portals of Vaughn's Dome, an enormous chamber within the cave, 26 ft. to 40 ft. wide, 800 ft. long, and 78 ft. high

By courtesy of the American Museum of Natural History

of crystals, and in the chambers stalagmites and stalactites abound. Notable geological formations, the nature of which is indicated by their names, are the pillars of Hercules, the giant's coffin, the star chamber, the marble temple, the Epsom salts deposits, the snowball room, the diamond grotto, the valley of flowers, and the florist's garden. The fauna of Mammoth Cave consists of blind fish and several insect species, while the outer galleries swarm with bats. The temp. remains at 54° throughout the year. The cave is mentioned in county records as far back as 1797. In the rotunda, saltpetre was prepared for use in gunpowder during the war of 1812.

**Mamore.** River of Bolivia. It rises in the Cochabamba Mts. and the main stream, here called the

Rio Grande, follows a circuitous course round the E. end of the range and finally flows N.N.W. to unite with the Beni to form the Madeira, an affluent of the Amazon. Its chief tributary, the Guaporé, forms the N.W. boundary of Bolivia. These three rivers drain the greater part of Bolivia, and receive numerous affluents from the Andes and the heights of Matto Grosso.

**Mamore.** A deer forest in Inverness-shire, Scotland. It lies between Ben Nevis and the head

of Loch Leven, and covers about 32,000 acres. Fort William is the nearest place of importance.

**Mamre.** Perhaps originally the name of an Amorite, who seems to have given it to a plain where Abraham bought the cave of Machpelah as a burying place for Sarah, and was afterwards buried in it himself. See Abraham; Machpelah.

**Mam Soul** OR MAM SODHAIL. Mountain on the borders of Inverness-shire and Ross and Cromarty, Scotland. It is 3,862 ft. high, and about  $3\frac{1}{2}$  m. W. of Loch Affric.

## MAN AND HIS EVOLUTION

Sir Arthur Keith, F.R.S., Author, *The Antiquity of Man*, etc.

*This article deals with man as a member of the animal kingdom, other aspects of the subject being under Anthropology and Ethnology. See Anatomy; Animal; Embryology; Heredity; Life; Mammal; also Family; Society, and other articles on man's domestic activities. See N.V. for later discoveries*

In everyday life no learned definition is needed to describe a member of the human species. Scientific men have very good reason for regarding the gorilla, the chimpanzee, and the orang as the nearest relatives of mankind now alive on earth, but no one, even the most experienced, hesitates for a moment in denying humanity to these great anthropoid apes. They are not rejected as members of the human species because they are covered with hair, nor because of their small brains.

### Chief Characteristics

The brain chamber in an average Englishman measures about 1,480 c.c. (about 90 cu. ins.); that of an average male gorilla 500 c.c. (32 cu. ins.); but occasional imbeciles have brains no larger than that of the gorilla, yet legally and morally are members of the human species. Apes are incapable of articulate speech, but humanity is not denied to a person who is mute. All anthropoid apes can use the great toe as a thumb, but although in many races the great toe can be used as a grasping organ, it is never set, as in anthropoids, in the form of a great free opposable grasping thumb.

We do not base our claim to humanity on one character; we are not men because of our peculiar great toes or plantigrade feet, but because we possess a general combination of characters, chief among which are the size and capacity of our brain and the general adaptation of our bodies to an upright posture on land. We have not a monopoly of the upright posture. The anthropoid ape shares that with us—with this difference. In the main, the anthropoid ape is a

tree-living, climbing animal, using all four limbs for progression. Man is a land-living form, using only his lower limbs for progression, and thus setting free his hands to be the servants of his brain.

**INTERMEDIATE FORMS. MISSING LINKS.** Although we have no difficulty in distinguishing man from all other kinds of animals in our modern world, yet there was a time in a geological sense of comparatively recent date, when it would have been very difficult for even the most skilled anatomist to draw a sharp line between human and anthropoid types. Anthropologists still debate whether *Pithecanthropus erectus* is to be regarded as man or ape. The matter has been discussed since 1894, when Eugène Dubois first announced the discovery of its fossil remains in Java. There is a general agreement as to the geological date at which this extinct form lived. The thigh bone, the skull cap, and the three teeth were found in a Pleistocene stratum, 45 ft. below the present surface of the land.

### Problem of the Humanoids

Some half-million years ago—assuming that the Pleistocene had a duration of one million years—this much debated animal form lived in the tropics of Java. If the thigh bone only had been found there would have been no discussion as to the nature of its owner. The thigh bone is human in shape and gives us the most complete assurance that *Pithecanthropus* walked in the human manner, and was fully adapted to the erect posture. If the erect posture is the human hall-mark, then this ancient Javanese form was a man. If, however, we centre our atten-

tion on the skull-cap, it is its anthropoid characters which impress us—its flat roof, its beetling eyebrow ridges, its peculiar shape. Yet the brain space is large; Du Bois estimated that it would have contained a brain 840 c.c. in size, being thus smaller than the lowest

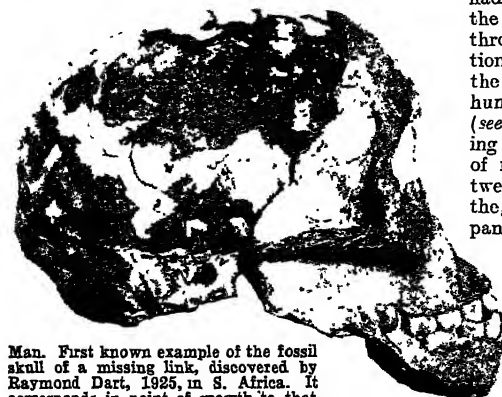
African cousins, the gorilla and chimpanzee, which are fitted for life on trees, the Dartians were adapted for life on the ground. Although they lived as late as the Pleistocene in S. Africa, they may well be regarded as survivals from the Miocene period just after they

had separated from the tree-living anthropoids, a separation which marks the first step in human evolution (see chart). Seeing the many points of resemblance between Dartians and the gorilla and chimpanzee, and that they have been found only in Africa, we may presume that they were evolved in that continent.

Equipped for life on land, they were free to spread abroad and so reach the other continents of the Old World, and in these continents become the fore-runners and ancestors of the Hominids of the Pleistocene. This conception is depicted in the chart in the next page.

Between 1929 and 1939 another form of Hominid was discovered in China, to which the discoverer, Davidson Black, gave the name *Sinanthropus*—the man of China. The scene of this discovery was a limestone hill at Choukoutien, 37 m. S.W. of Peiping (Peking). From the filled-in caves of the hill, fossil parts of 40 *Sinanthropes* have been extracted. They were contemporaries of the Hominids of Java—at least, both belong to the same Pleistocene horizon, but the *Sinanthropes* were larger brained and were rather more human in their structural characters, particularly in their teeth, which possess certain features now found in the teeth of Mongolian peoples. In the family tree, *Sinanthropus*, in accordance with Weidenreich's idea of his origin, is given a place in the Mongolian stem. The fossil Hominid of Java, on the other hand, is connected by a series of intermediate links with the aborigines of Australia, and is therefore given a place in the stem leading on to Australasians.

**PILTDOWN MAN.** In 1912 Charles Dawson and Smith Woodward announced the discovery of fossil bones at Piltdown in Sussex. Only the greater part of a skull, less than half of a lower jaw, and three teeth

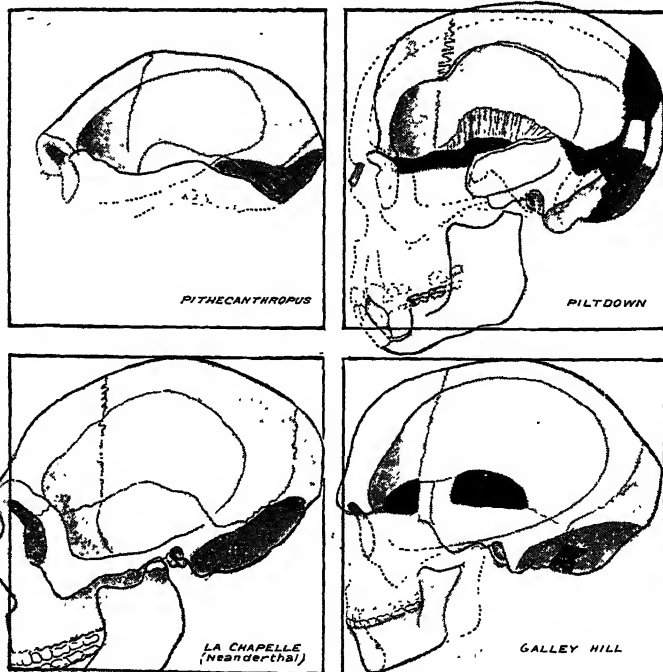


Man. First known example of the fossil skull of a missing link, discovered by Raymond Dart, 1925, in S. Africa. It corresponds in point of growth to that of a human child of six years

human brain, but greater than the largest anthropoid brain. The cast taken of the interior of the skull-cap showed that the brain was human, not anthropoid, in its markings. In brief, *Pithecanthropus* was neither human nor ape, but the representative of a great missing group of animals which have been named Hominids. Here there is a difficult problem, but the majority of the characters are at the human rather than at the anthropoid end of the balance. The discovery of *Pithecanthropus* was a realization of Darwin's postulate; if the theory that men and anthropoids are the descendants of a common stock is correct, then we ought to discover extinct forms in which the characters of apes and men are blended.

In 1925 Raymond Dart discovered in S. Africa the fossil remains of a missing link which represents a much earlier stage in the evolution of man than the fossil Hominid of Java. To the family represented by these extinct beings Dart gave the name of *Australopithecinae*, but here we shall speak of them as Dartians.

The Dartians had the face and skull of anthropoids; their brains, too, were anthropoid in dimensions, ranging from 435 c.c. to 650 c.c., yet they possessed certain human features. Their teeth were human, not anthropoid. Their bodies and limbs also were human in that they were adapted for the upright posture on the ground. Unlike their



Man. Comparative sizes of skulls of four types of primitive man, based upon fossil remains. Each side of the ruled squares represents 200 millimetres or 7.87 ins.



were found. They were discovered in a stratum which is apparently of about the same geological date as that in which the Javanese remains were found. If the jaw alone had been found, it is certain that it would have been assigned to an anthropoid not unlike the chimpanzee. The canine tooth is conical and prominent as in anthropoids, yet in the grinding or molar teeth, and also in minor features of the jaw itself, there are certain human traits. The skull is distinctly human.

We classify modern races of mankind into three groups as regards size of brain.

(1) The "big-brained," where the average capacity, as in European nations, rises above 1,450 c.c.; (2) the "small-brained," in which the average falls below 1,350 c.c., as is the case with the aborigines of Australia; and (3) the intermediate or medium-brained, in which the brain is above 1,350 c.c. but under 1,450, including many native races of Africa and India.

**Pitdown and Java: Comparison**  
Smith Woodward assigned the skull found at Pitdown to a form which he named *Eoanthropus*. By size of brain, *Eoanthropus* falls on the border line between the big-brained and medium-brained groups. If we confine our attention to the brain we give our judgement unhesitatingly that *Eoanthropus* was a human being; if we regard the jaw as more essential than the brain, then we must assign *Eoanthropus* to a non-human class. Here again we have a transitional form, but one which is much more decidedly human than *Pithecanthropus*. Thus, about the same ancient period there was living in Java a being which had the human form of body, but an ape-like skull, and in England a being with a human brain and an ape-like jaw. We can explain the occurrence of such forms only if we suppose Darwin's theory valid.

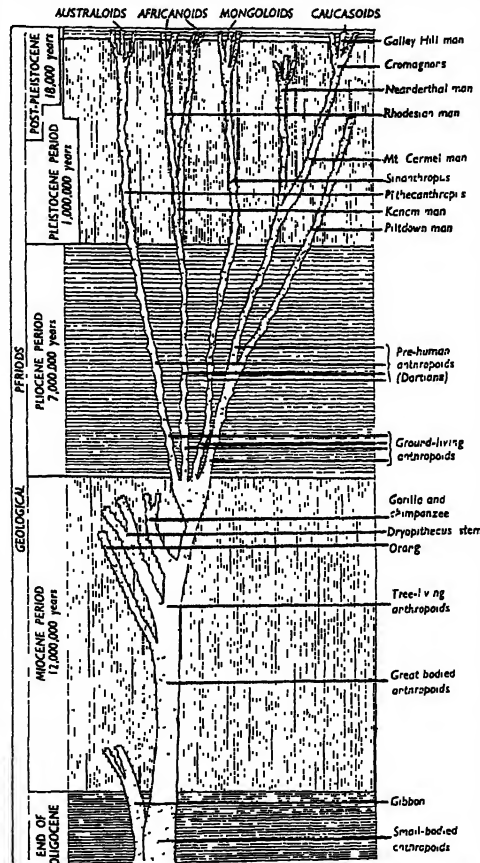
**NEANDERTHAL MAN.** Another intermediate type, known as Neanderthal man, although possessing many ape-like features, has never had the term "man" denied it. In 1857 some labourers, while excavating the Neanderthal cave, discovered the type specimen of this peculiar species of mankind. The nature of the man, of whom these bones had formed part, was much debated at the time. Virchow regarded the peculiar characters of the fossil bones as the product of disease. In Huxley's opinion Neanderthal man represented a primitive human type.

William King regarded the fossil skull and skeleton as belonging to an ancient and extinct species of mankind which he named *Homo neanderthalensis*, and time has proved that his verdict was right.

In the later part of the 19th century and the early part of the 20th, further discoveries were made of this extinct type of man in Belgium, France, Spain, Germany, and Croatia. These discoveries brought

derthal man represented a stage in the evolution of modern Europeans. This idea had to be given up because everywhere in Europe graves containing the fossil bones of Neanderthal man were immediately followed by burials which contained the fossil remains of men of Caucasian type. Nowhere have intermediate types been found, and it came to be realized that so far as Europe is concerned,

the Neanderthals had not been transmuted into, but had been suddenly replaced by, Caucasians who, therefore, had been evolved outside the bounds of Europe. Neanderthal man was consequently removed from the ancestry of modern Europeans. In 1929, however, an excavating party, led by Dorothy Garrod, began the exploration of caves in Mount Carmel, Palestine, and brought to light the fossil bones of people who were the contemporaries of the Neanderthals of Europe. The fossil Carmelites were of an intermediate type, having a mixture of Neanderthalian and Caucasian features. They are regarded as representing a stage in the evolution of a Neanderthal into a Caucasian type. Thus Neanderthal man has been restored to a place in the ancestry of Europeans (see chart). Somewhere in Asia, to the E. of Palestine,



Man. Chart showing the anthropologists' conception of the origin of the present groups of mankind, which are depicted as stemming from a common ancestry at the beginning of the Pliocene period, and assuming their modern forms in the Pleistocene. Earliest known forms such as *Pithecanthropus*, *Sinanthropus*, etc., are given places in human lineage

another very important addition to our knowledge of ancient man. The remains of Pitdown man and of *Pithecanthropus* were found in deposits laid down before the midpoint of the Pleistocene. The remains of Neanderthal man have all been found in cave-strata or deposits which are attributed to the later half of the Pleistocene.

**FOSSIL MEN OF MOUNT CARMEL.** At first it was thought that Nean-

anthropologists expect to find in graves, older than those of Mount Carmel, the fossil bones of Neanderthals showing clearly their characteristics at a still earlier stage of their transmutation into a Caucasian type.

**RHODESIAN MAN.** A human skull, with some limb bones, discovered during mining operations in 1921 at the Broken Hill Mine in Rhodesia, can serve as progenitor



Man. Types of primitive man illustrated by reconstructions, showing the increasing intelligence indicated by greater prominence of chin, reduction of eyebrow ridges, and increased size of skull with proportionately greater brain capacity. Left to right, trinit or ape man of Java, *Pithecanthropus erectus*; Neanderthal man, *Homo neanderthalensis*; Cro-magnon man, *Homo sapiens*

From restorations by J. H. McGregor; by courtesy of The American Museum of Natural History

of some living African races, *Homo rhodesiensis* probably inhabited Africa when Neanderthal man was living in Europe. His eyebrow ridges and his jaws are massive, and in these characters he resembles the gorilla. But his brain was almost equal in volume to that of many modern natives of Africa. Another fossil type came to light before the discovery of Rhodesian man, known as the Boskop type. Boskop man lived in S. Africa towards the end of the Pleistocene period. He had a long skull, a very large brain, and small eyebrow ridges, the antipodes of the Rhodesian type. Yet fossil types have been discovered at Florisbad and at Lebomba which reveal transitions from the Rhodesian to the Boskop type. Further, all intermediate types between Boskop man and the living Bushman and Hottentot races of S. Africa are now known. We infer, then, that these peoples have been evolved from the very primitive Rhodesian type of mid-Pleistocene times. This conception has been embodied in the chart.

**ANTQUITY OF MODERN MAN.** Although the modern races of mankind show great diversity of bodily characters, yet these are not of a pronounced structural kind. The white man and the negro are but variants of a common form or species which we name modern man. All modern races are fertile—the one with the other; all are formed on the same basal pattern. To account for this similarity students of human evolution have supposed that all living or modern races of mankind have been evolved from a common ancestry, the fossil remains of which they expected to find in the older

deposits of the Pleistocene period. Hence in earlier charts of man's family tree all modern races were shown emerging from a common ancestor at the beginning of the Pleistocene. The search for such an ancestral type has been in vain; all the earlier types that have been found are very unlike the modern type. After 1930 the outlook of anthropologists was altered by the discovery of fossil forms which linked the early Pleistocene types to modern types, such as *Pithecanthropus* to the Australian aborigines, the Rhodesian to the Bushman, *Sinanthropus* to the Mongolian peoples, and so on. Hence they had to recast their evolutionary tree and give it the form shown in the chart. Hence emerges the surprising fact that modern races, in the course of their evolution, have not diverged in structure but have converged. This has come about by each race assuming independently many similar modifications.

**THE ANTIQUITY OF THE MODERN EUROPEAN TYPE.** Although there is a general agreement amongst anthropologists that the Caucasian type made its first appearance in Europe, and supplanted the Neanderthal type, some 60,000 or 70,000 years ago, there are still some who remain uncertain on this point. They have in mind many cases in England, France, and Italy where human remains of the Caucasian type have been found deep in apparently undisturbed strata of early Pleistocene date. The most famous of these is the Galley Hill man. Galley Hill is on the 100-ft. terrace on the S. side of the lower valley of the Thames. There in 1888 all parts of a human skeleton were found embedded in

the terrace at a depth of 8 ft. If the body had been entombed when the Thames deposited the stratum in which the body lay, then Galley Hill man was of early Pleistocene date—as old as the Piltdown man. As to his racial characters there is no dispute; he was like the long-headed type whose fossil remains are found in Continental caves dating from towards the end of the Pleistocene period. If we accept the geological evidence at its face value, then we have to believe that a human race can exist for hundreds of thousands of years without undergoing change. Much more probable is a misinterpretation of the geological evidence. That is the view taken in this article. Hence in the chart Galley Hill man is given a place in the Caucasian stem late in the Pleistocene, whereas in older charts of the same kind he was placed early in the Pleistocene.

Our belief that man has been evolved from a lower form does not rest on the discovery of fossil remains of extinct human types. Indeed, Darwin, when he published the *Descent of Man* in 1871, made very little use of geological evidence. He did not see how the stages which the human body is known to pass through during development of the embryo could be explained unless it was supposed that the human body was, like all living forms a product of evolution. At the end of the first month of development the human embryo shows a distinct tail which soon afterwards becomes gradually drawn into the rump, leaving a dimple to mark the point at which it disappears. In this respect man does not differ from anthropoid apes; their tails disappear at an

equally early period and in a similar manner. Occasionally the human brain is arrested in its development. In some of these cases it shows a broad resemblance in its convolutionary pattern to that found in anthropoid brains. At one stage of development the brain of man and ape manifest a degree of resemblance that we are compelled to regard as modifications of a common pattern. The manner in which the developing ovum attaches itself to the mother's womb and the stages through which the embryo passes are exactly alike in man and the anthropoid ape. In the human embryo of the third week we see the foundation laid down for a gill-system—which suddenly becomes transformed to meet the needs of a land-living organization.

Of the 2,000,000,000 people now estimated to be living no two are identical. Everyone has his or her distinctive marks. Every face is made up of the same parts, but there is an infinity of variety as regards the shape and size of forehead, eyes, nose, mouth, chin, and cheeks.

Those individual differences on the surface of the body extend also to all its deeper structures. The wealth of structural variation is recognized by all who have dissected the human body. We know that structural variations are inherited, and that they afford material for the production or evolution of new varieties of mankind. Certain structures of the human body are more liable to variation than others. This is particularly true of those called "vestigial"—structures which are now of little or of no functional use to us. We account for their presence by supposing that we have inherited them from a stock in which they were of functional importance.

In the human ear there is often to be seen a small nodule or projection on its entwined margin. If the pointed ear, seen in lower forms of apes and on nearly all mammals in which the ear is freely movable, were to be enfolded and fixed as the human ear is, then the point would occupy the position of the nodule so often seen in the human ear. We suppose that at one stage of man's ancestry the ear was pointed and freely movable. There are at least a dozen vestigial muscles in the human body. We find vestiges in our hands and feet of bones which are well developed in lower apes. We cannot account for the presence of vestigial structures, nor

for the wealth of structural variation in the human body, unless we suppose that there lies behind us an evolutionary history.

**STRUCTURAL DEGENERATION.** Under conditions of current civilization the human body is being subjected to a more severe strain than in any former stage of its evolution. Our organs were evolved to meet the conditions of a life very different from that which we now lead. Man has known the uses of fire for a very long time; in the caves occupied by the *Sinanthropes* of China, traces of hearths have been found. It is possible that the discovery of fire and its application to the preparation of food may be related to the reduction in size of teeth and jaws in modern races. Certain it is that cooking completely altered the nature of the task thrown on the organs which have to masticate, digest, and absorb food. Another revolution in the conditions in which man lives was effected with the introduction of agriculture; an abundance of easily digested food then became available. The art of agriculture was probably first practised in S.W. Asia; by the beginning of the 4th millennium B.C., it was widely spread in Mesopotamia and in Egypt.

The third great revolution in man's environment began only a few centuries ago, when by means of a world-wide commerce the luxuries of every part of the earth could be emptied into the lap of Europe. That structural

changes are being produced under these new conditions there can be no doubt. We never meet the contracted palates, the irregularities of the teeth and jaws, the constricted noses, and sunken-in cheek-bones now so prevalent in England among the remains of the pre-Roman inhabitants of Britain.

There can be no doubt that there is a distinct tendency towards structural degeneration of our jaws and teeth. We know nothing of the condition of the stomach and bowels of our ancestors, but we have every reason to suppose that we are much more subject to alimentary disturbances and diseases than they were. Inflammation of the appendix vermiformis—appendicitis—certainly existed centuries before medical men were cognizant of it as a special and common disease. Our knowledge of appendicitis began only a few years before 1900. At first the liability of the appendix to disease was attributed to its vestigial nature. We now know that at birth the appendix is as well developed in man as in anthropoid apes, but whereas in the apes the appendix retains its pristine form and activity, in man, at least in a great proportion of Europeans, the appendix tends to atrophy and becomes functionless or diseased as growth of the body proceeds. The appendix undergoes degeneration, not because of its vestigial nature, but because our dietary has completely changed the amount and nature of its



Man. Comparison of the skulls of certain anthropoid apes with those of races of primitive men. 1. Gibbon. 2. Orang. 3. Chimpanzee. 4. Gorilla, adult. 5. Gorilla, young. 6. Trinil or ape man of Java. 7. Pittdown man. 8. Neanderthal. 9. Taigai. 10. Crémagnon. 11. Recent

By courtesy of The American Museum of Natural History

task. The appendix and caecum are intrinsic parts of the great bowel.

Metchnikoff came to the conclusion that the whole of the human great bowel was superfluous, and that the human body would be better without it. There can be no doubt that the great bowel is particularly liable to disease among highly civilized people of today. Its condition may become so injurious to the whole system that excision offers the only means of cure. Life and health are possible after such a radical operation, though medicine aims at treating the great bowel so that its removal is unnecessary.

**GROWTH.** On the other hand, we have every reason to believe that in stature and in size of body we are not degenerating, but are growing taller and heavier. It is also becoming more and more evident that certain small bodies or glands—known as glands of internal secretion, such as the pituitary, the thyroid, suprarenal, testes, and ovaries—have a very direct influence on the growth of the various parts of the body. They throw into the circulation substances which regulate the rate as well as the kind of growth in bones, muscles, and tissues of the body. In giants there is always a pathological increase in the size of the pituitary body; in certain dwarfs there is a diseased condition of the thyroid gland.

**FURTHER EVOLUTION OF THE HUMAN BODY.** The more progressive races of mankind differ from the less progressive in a functional rather than in a structural sense. We have no reason to suppose that the brain of the European, the Egyptian, or the American Indian has undergone any decided increase in size during the last five or six thousand years; but we have reason to think that the progressive types are the bigger brained, and that if we take a sufficiently long period for our survey, the tendency in nature has always been, and always will be, towards the selection and preservation of the races possessing a high average of brain size. Against this optimistic statement, however, must be set the fact that the late Pleistocene ancestors of modern races had larger brains than their present-day descendants. There is also a tendency towards the preservation of the characters seen in quite young children—a relatively large brain, a face which stops short of the rugged massiveness of the robust adult

man, a development of bone and muscle of a more delicate or adolescent mould.

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**Man, ISLE OF.** Island in the Irish Sea. Part of the British Empire, it has a government and constitution distinct from that of the United Kingdom, although the imperial parliament exercises certain powers over it. It is 27 m. from the W. coast of England, and about the same from both Scotland and Ireland; with a length of 33 m. and a breadth of 12 m., it has an area of 221 sq. m. Belonging to it is a small island on the S., the Calf of Man. The pop. of the Isle of Man is 49,308.

The coast, in which are a number of bays and other openings, is in the main rugged, and the interior is hilly. A range of hills stretches from N.E. to S.W., the highest point being Snaefell, 2,034 ft. Between the hills are beautiful glens. There are no lakes, but a number of streams add to the beauty of the scenery. Douglas is the capital and the largest town. Other towns are Castletown, the old capital, Peel, and Ramsey, while Port Erin, Port St. Mary, Kirk Michael, and Laxey are among

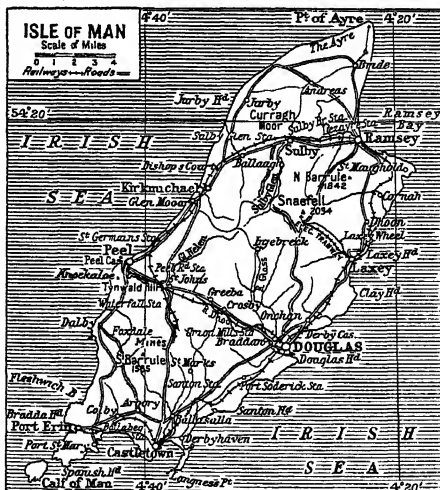
the smaller towns on the coast. The climate is mild; fuchsias and myrtles grow in profusion in the open. Snipe are found, but there is no abundance of game. The island is known, however, for its breed of tailless cats. The coat of arms is three legs, taken, it is said, from a pillar cross at Maughold in the N. of the island.

The soil of the island is not very fertile, but much of it is cultivated. Oats, barley, wheat, and turnips are the chief crops. Dairy farming is carried on, and much of the land affords pasture for cattle, horses, and sheep. There is a coasting trade, and some of the inhabitants are employed in the herring fishing, but the fisheries are far less important than formerly, though 169 fishing vessels are still registered. A rly. system of about 50 m. links up the principal towns, and there are electric tramways radiating from Douglas. There is regular steamboat communication with Liverpool, Fleetwood, Barrow, Glasgow, Dublin, Belfast, and other places. There are a few domestic industries, but many of the inhabitants obtain a livelihood by providing for visitors. The provision of cheap and rapid transit in the 19th century made the island, especially Douglas, one of the most popular pleasure resorts in the British Isles.

The island is governed by a lieutenant-governor appointed by the crown, a council consisting of the bishop, deemsters, and other high officials, and a house of keys, an elected body of 24. These two bodies form the court of Tynwald, which is the executive as well as



Isle of Man arms



Isle of Man. Map of the self-governing island in the Irish Sea, showing the many favourite resorts of visitors from the mainland

the legislative authority. The lieutenant-governor is its president. For local government purposes it is divided into six sheadings, each with its own officials, and parishes.

The island revenue comes mainly from the customs duties, and of it £10,000 a year is paid to the imperial exchequer. There is a high court of justice, over which also the lieutenant-governor presides; it has common law and chancery divisions, with a court of appeal. In the common law courts the deemsters are the judges, and they also hold courts of summary jurisdiction. There are also magistrates, whose duties resemble those of their fellows in England. The law relating to real property differs from that of England, but most of the other branches have been made similar. The Isle of Man is not bound by acts of the British parliament unless specifically mentioned in them. The island has its own bishop, Sodor and Man, who has his own ecclesiastical organization. The diocese is part of the Church of England, being in the province of York, although there was once a separate Manx Church.

#### History of the Isle

The origin of its name is said to be Mananan Maclir, the pre-Christian sea-god of the Irish. At one time known as Mona, the island was inhabited in early times by a Celtic people. Remains of that, or a still earlier age, exist in the form of Runic crosses, portions of stone circles, cairns, mounds, and lake dwellings. It had its own language, a branch of Celtic. In the 6th and 7th centuries the people were converted to Christianity by Irish missionaries. Before 700 it was conquered by Scandinavian rovers, and it remained under their rule for a long time, although such was not always effective.

The kings of Norway succeeded to this Scandinavian conquest, and Magnus Barefoot made his authority real by his presence in the island, but soon the kings of Scotland appeared as rivals. The result was that, after a Norwegian defeat at Largs in 1263, the island was handed over, in return for a sum of money, to Scotland. The Scots, however, were not liked; an appeal brought Edward I to the aid of the Manx, and after a time the sovereignty of England was firmly established. In 1406 Henry IV gave the island to Sir John Stanley, and the Stanleys, earls of Derby, were lords of Man until 1736. During the time of the Commonwealth the island was taken from the 7th earl, in spite of the gallantry of his wife.

This was the time when the native hero, William Christian, executed at the Restoration, led the people in a revolt against the Stanley rule, which was in some respects oppressive.

In 1736 the lordship passed to the duke of Atholl, a relation of the earls of Derby. In 1765 the sovereign rights of the duke were bought by the English crown for £70,000. The main reason for this was because the island had now become a great centre for smuggling, but this continued. In 1828 the remaining rights of the duke of Atholl were bought for over £400,000. The British parliament then exercised the sovereignty, but in 1866 greater powers in the direction of home rule were given to the island authorities.

In recent times the isle has produced literary men of some importance, the most noteworthy being T. E. Brown and Hall Caine, a number of whose novels, e.g. *The Manxman*, *The Deemster*, *The Master of Man*, *The Woman of Knockaloe*, are set in the island. During the First Great War there were internment camps at Knockaloe and Douglas, and at the outbreak of the Second Great War camps for enemy aliens were similarly established on the island, being followed by others for prisoners of war. The principal sites were at Douglas, Ramsey, Peel, and Port Erin. A number of persons arrested under regulation 18b, including Sir O. Mosley, were detained on the island. The R.A.F. No. 1 Ground Gunnery School was located at Douglas and Castletown from 1940 to 1942, and the R.A.F. Regt. No. 2 Training Centre was at Castletown during 1942-43; a Royal Navy training establishment for boys was at Douglas from 1943 to 1945.

Limited conscription was introduced in Oct., 1939. In 1942 the Tynwald rejected extended conscription under the National Service (No. 2) Act of Dec., 1941, but in 1948 it reversed this decision. *Consult* *The Little Manx Island*, T. Hall Caine, 1891; *History of the Isle of Man*, A. W. Moore, 1900.

**Man**, HENRI DE (b. 1885). A Belgian politician and writer. He was born at Antwerp, educated at Brussels, Leipzig, and Vienna. In 1911 he became director of Belgian committee of labour education, and from 1920 to 1922 principal of the Belgian labour college. From 1920 to 1932 he held various professional posts at Brussels and Frankfurt o. M. He gained inter-

national reputation by his views on Socialism expressed in his books *Remaking of a Mind*, 1919; *Psychology of Socialism*, 1927; *Joy in Work*, 1928; *The Socialist Idea*, 1933; *The Belgian Plan of Work*, 1933. His views were much quoted by the Nazis, whose experiments he tried to adapt to his own Socialist ideology. On the strength of his published work he was appointed minister of public works and unemployment, 1935-36; minister of finance, 1936-38. At one time vice-president of the Belgian labour party, he resigned from it simultaneously with giving up his portfolio, issued a manifesto of the task of socialism, and founded a pro-Nazi party. He also started two journals, *Le Peuple*, 1941, and *Le Travailleur*, which was German-controlled, shortly afterwards. In Aug., 1944, he was arrested by the Free French forces.

**Mana**. A native term of the Pacific region for an impersonal supernatural power believed to act, for good or ill, through a material vehicle. Mana is communicated to the medium (a bone, stone, water) by any personality already possessing it, who may be a living man, disembodied spirit, or supernatural being.

**Manaar**. Gulf and island between Madras state and Ceylon. The island, with Adam's Bridge and Rameswaram island, forms an almost continuous ridge between Ceylon and the Deccan; Pamban Passagelies to the W. end, and Manaar Island is near Ceylon, to which it belongs. The gulf lies S.W. of the island, and is so shallow that ocean steamers must pass S. of Ceylon on the route from Cape Comorin to Madras and Calcutta. Manaar town lies under the shadow of an old Dutch fort, and its church contains Portuguese tombstones of the 16th century.

Pearl fishing had a meteoric life in Manaar. The first fishing in 1905 produced 50 million oysters. The industry went into liquidation in 1912, was taken over by the govt., but ceased in 1925. *Trepang* (*bêche-de-mer*) is obtained in the neighbourhood of Rameswaram.

**Manabi**. A maritime prov. of Ecuador, bordering on the Pacific Ocean. Its surface is hilly, well forested, and fertile, and large quantities of sugar and cocoa are produced. Area, 7,891 sq. m. Pop. 312,850. The capital is Manabi or Puertoviejo.

**Manacle Rocks**. Dangerous reef off St. Keverne, Cornwall, England, 7 m. S. of Falmouth. The



Manacles, as they are called, have been the scene of many shipwrecks, notably of the emigrant vessel, John, May 1, 1855, with the loss of 200 lives.

**Manacor.** Town of Spain, on the island of Majorca, Balearic Islands. It stands near the E. coast, is well built and spacious, and contains many fine buildings, among them a palace of the kings of Majorca. Trade is carried on in wine, fruit, oil, cereals, and cattle. It is the starting point for tourists visiting the caves of Drach and Artá. There is a rly. to Palma. Pop. 13,113. See Majorca.

**Maná Ghat.** Pass over the Himalayas, in the Garhwal district of the Uttar union, India. It is used by Hindu pilgrims on their journeys to Lake Manasarowar. Its height is 18,000 ft.

**Managua.** Lake of Nicaragua, Central America, on the W. side of the republic. Formerly known as Leon, it has a length of 32 m., and a width of 16 m. It is picturesquely situated 30 ft. above the level of Lake Nicaragua, into which it drains by the Tipitapa river.

**Managua.** Town of Nicaragua, Central America, the capital of the republic, and of the dept. of Managua. It stands on Lake Managua, is connected by rly. with Granada and the port of Corinto, and is a mart for the coffee locally grown. It has a national palace, a town hall, and a museum. In 1931 the city was almost entirely destroyed by earthquake, but has since been reconstructed. Pop. 132,154.

**Manahiki.** Island of Polynesia, Pacific Ocean, belonging to Great Britain. It lies in lat. 10° S.



Manaos, Brazil. Theatre and monument commemorating the opening of the Amazon to international traffic in 1867

and long. 160° W., and is a coral atoll, containing a large lagoon, from which pearl shell was formerly obtained. It has extensive coconut groves. For administrative purposes it is included with the Cook

Islands (q.v.). Area about 30 sq. m. Pop. 435.

**Man and Superman.** Comedy by Bernard Shaw. First produced at the Court Theatre, London, May 21, 1905, it was based on the Nietzschean gospel of the superman and his eternal recurrence, and tells how John Tanner, author of the Revolutionist's Handbook and Pocket Companion (printed as an appendix to the published edition) is pursued and married by Ann Whitefield, the impersonation of the life force. In the original production Granville-Barker appeared as Tanner and Lillah McCarthy as Ann. The third act, showing Don Juan in Hell, was omitted but included in the revival at the Criterion, 1911, when Robert Loraine scored a great success as Tanner.



Manatee. Specimen of the large aquatic mammal found in the Atlantic Ocean

Later revivals of the abridged version included those at the Prince's, 1927 (with Gwen Ffrangcon-Davies as Ann); Court, 1930; Old Vic, 1938. Full versions were given at the Regent, 1925 (with Esmé Percy as Tanner); Cambridge, 1935; Alvin (New York), 1947.

**Manaoag.** Town of Luzon, Philippine Islands. It is in the prov. of Pangasinán, 20 m. E. by N. of Lingayén. In the vicinity rice, maize, sugar, and tobacco are cultivated. Pop. est. 22,000.

**Manaos OR MANAUS.** City and river port of Brazil, the capital of the state of Amazonas. It stands on the Rio Negro, 10 m. from its entry into the Amazon, and 1,000 m. from the Atlantic. It has a good harbour, is a regular port of call for liners. The steamship journey from Para takes four days. Formerly known as Barra do Rio Negro, it is a handsome, well-built town, with fine parks and public buildings. Rubber, cocoa, nuts, hides, and dried fish are exported. Steamer connexion is maintained with Europe and the U.S.A. Pop. 107,456.

**Manasarowar OR TSO-MAVANG.** Lake in the extreme W. of Tibet. With the neighbouring Mt. Kailas, it is a goal of Hindu pilgrims, as well as an object of veneration to Lamaism. The lake, oval in shape, lies at 15,100 ft. alt. See Lamaism.

**Manasseh.** (1) Elder son of Joseph (Gen. 41), over whom his younger brother Ephraim took precedence. His descendants, a tribe which settled on both sides of the Jordan, were noted as warriors, Gideon and Jephthah being two of their most notable men.

(2) King of Judah, son and successor to Hezekiah. He reigned c. 697-642 B.C., restored idolatry, persecuted the prophets, and was carried captive to Babylon. An apocryphal Prayer of Manasses occurs in some MSS. of the Septuagint (2 Kings 21; 2 Chron. 33). Manasses is a Greek form of the name (Matt. 1, v. 10).

**Manatee.** Aquatic mammal of the order of Sirenia, or sea cows. It is about 8 ft. in length, and in general appearance somewhat re-

sembles a very bulky and heavy seal; but there are no external hind limbs, the body ending in a broad flattened tail, and the fore limbs forming paddles. The head is blunt, and the great upper lip is divided.

The eyes are comparatively small; the skin is thick and wrinkled; and the body is covered with fine hairs. Manatees live in fresh water and along the coasts of S. America and Africa, feeding on aquatic vegetation.

**Manbhum.** Dist. of India, in Bihar state. Situated W. of Bengal, it is the most populous district in the plateau of Chota Nagpur; it owes its importance in this respect to the Jherria coalfield, opened in 1893, the most valuable coalfield in India. The coal is mined by the East India rly., and sent to Calcutta for use on the rlys., for bunker coal, and for export to Colombo and Singapore. The mines are worked under considerable difficulties; the output per miner is comparatively small, and the miners rarely work continuously for more than a few weeks at a time. More than three-quarters of the cultivated area is devoted to rice. The chief town is Purulia. Area, 4,131 sq. m. Pop. 2,032,146.

**Manche.** Maritime dept. of France, taking its name from Fr. La Manche, the English Channel. Part of the old prov. of Normandy, it is bounded W., N., and N.E. by the English Channel, and adjoins the depts. of Calvados, Orne, Mayenne, and Ile-et-Vilaine. It includes the peninsula of the Cotentin, and its long coast-line alternates



between rugged cliffs and long dunes. The cape of La Hague forms its N. extremity. Cherbourg, with its great naval base, is the chief port, Granville a fishing centre, and there are several bathing resorts. The surface is generally hilly, watered by numerous small streams, and affords good pasturage, especially for sheep and cattle. The country is well wooded in parts, and large quantities of apples and pears are grown; cider and some perry are manufactured. Textiles, granite quarries, shipbuilding,

salt, ironware, and bleaching are representative industries. The chief town is St. Lô, the arrondissements being those of Cherbourg, Coutances, Mortain, Valognes, and Avranches. Area, 2,475 sq. m. Pop. 435,153.

During the Second Great War the dept. of Manche was the scene of the Allied landing of June 6, 1944, and of the heaviest fighting in France. Many of its towns and villages, including St. Lô, were destroyed completely or in part. See Europe, Liberation of Western.

## MANCHESTER: ITS MANIFOLD INTERESTS

Wright Robinson, Alderman of Manchester City Council

*This article is followed by others on certain aspects of life in Manchester: e.g. Manchester Guardian; Manchester School; Manchester Ship Canal, etc. See also Cotton; Lancashire; and biographies of Bright; Cobden; Scott; and others associated with the city*

Manchester is a city and inland seaport of Lancs, England, ranking as the fourth city in the country with an estimated pop. (1946) of 684,640, and as the fourth port by reason of its 35½ m. long ship canal. It lies on a plain rising to the N. at the junction of the river Irwell (a trib. of the Mersey) and the river Medlock, 187 m. N.W. of London, 31 m. E. of Liverpool. It covers an area of 43 sq. m. and its climate is mild and humid. Manchester is an airport with regular services running from Ringway airport.

The largest purely commercial city in Great Britain, it functions not only as a clearing house and commercial centre for the region with which it has planning and service relations, but for a far wider area. It has been estimated that 4,000,000 people live within a 20-m. radius, 10,250,000 within a 50-m. radius. Although the city is best known for its cotton goods, it is one of the world's great engineering centres, one of the country's largest clothing centres, and has important production plants in metal, minerals, rubber, chemicals, furniture, heavy motors, radio, and other industries. It is the capital of the cooperative movement, which was born at Rochdale a few miles away, but found its fuller development in Manchester. The Cooperative Wholesale society has extensive premises near the city's centre, and employs many thousand workers in its factories in and around the city.

Manchester is second only to London as a newspaper centre.



Manchester arms

Apart from the two local morning and two local evening papers, northern editions of four national dailies are produced in Manchester. The Kemsley press produces morning, evening, and weekly papers as well as numerous magazines and periodicals; its printing house in Withy Grove is said to be the largest printing unit in the world.

Architecturally, Manchester is not equal to its reputation. The rapid rise in pop. from 72,275 in 1801 to 303,382 in 1852, at a time when there was little public feeling about, and no regulation of, development, left it a legacy of unplanned thoroughfares and densely packed slum dwellings. The city's pride went into its massive warehouses, and before the Second Great War, Portland St., a consistent warehousing street, was the handsomest street in the city, the symbolic epitome of Manchester's major concern with trade. By contrast, over 50,000 houses are listed for demolition as below reasonable standards. Manchester was the cradle of the Industrial Revolution, a pioneer in industrialisation, and is now facing the problems arising from its earlier unplanned development. The congestion of works and factories, and the density of housing impregnate the atmosphere with smoke, and greatly reduce the amount of sunlight that reaches the inhabitants. Powers to make the centre of the city a smoke-free zone have been granted by parliament and mark an important stage in smoke abatement.

Such fine buildings as there are lack space to win them appreciation. Each is unrelated to its neighbour except in its common dark or black face from the grimy

atmosphere. A short walk from any one of the three principal rly. stations, or from the civic centre, would take in most of the noteworthy buildings. Manchester cathedral church, founded as a collegiate church in 1421, and the city's oldest and most impressive link with the past, became the cathedral church in 1847 when the see of Manchester was created. Chetham hospital, a school for 90 boys, conjoined with one of the first free libraries in Europe, founded under the will of Humphrey Chetham (d. 1653), and dedicated in 1656, is also a reminder to the hurrying passer-by of a more leisurely past.

All other notable buildings emphasise the fact that Manchester is essentially modern. The royal exchange, a massive building dedicated to trade and commerce, although concerned primarily with cotton, is used by traders from scores of other branches of trade. A business man may see there more clients in half a day than he could visit individually in a week. Until it was damaged by German bombs in 1941 its main hall could accommodate 13,000 traders at one time; it had ten floors, a post office, 250 offices, 38 shops, and a ground space of 1½ acres. The street on which the main frontage abuts, Cross St., has large banks and insurance and shipping offices in all styles mixed with small shops; it does not make an impressive whole. The ship canal offices and the Midland bank dominate the upper section of King St., a shopping street in its lower section.

### Town Hall and Library

The civic centre has its main frontage on Albert Square, named from the Prince Albert memorial which is its centrepiece. One side of the square is occupied by the old town hall, opened 1877, at a cost of a million pounds. The frontage is 328 ft., with a pointed tower rising 284 ft. over the main entrance. Two bridges connect the old town hall with a new extension opened in 1938 by George VI. Beyond the extension is the central library, a modern classical building, circular in shape, and the most distinctive architectural feature of the city. The library and extension cost one and a half million pounds. The library, one of the world's largest, has commercial, music, and reference sections as well as a lending dept. Other buildings of note are the university, college of technology, John Rylands library, Midland hotel, the royal infirmary on its 13½-acre site, and the Christie

cancer hospital; but the real Manchester cannot be assessed in terms of its face value.

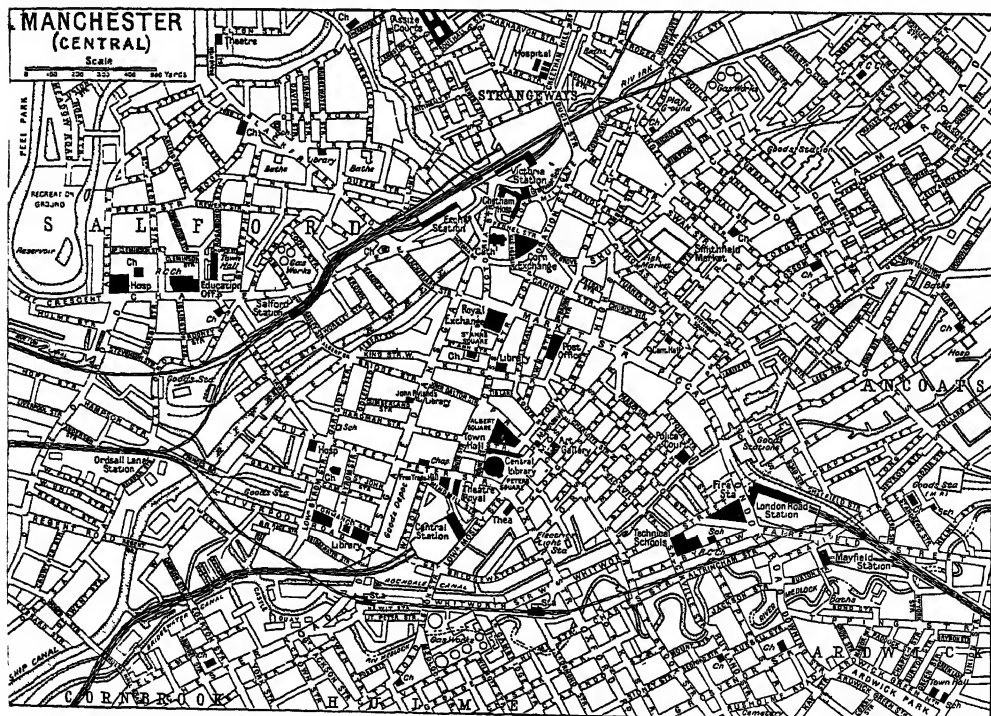
Four names stand out in the history of Manchester education: Hugh Oldham, founder (1515) of the grammar school, now the largest public school in the country; Humphrey Chetham, under whose will Chetham hospital and library were opened, 1656; John Owens, founder (1846) of Owens College, later to become merged with Manchester university; and William Hulme, founder of the Hulme charity and the Hulme grammar school. The tradition so begun has been well maintained. Manchester university is the largest and second oldest of the provincial universities. With its 4,000 students in attendance, it caters through its extra-mural dept. for another 7,500 part-time students. The college of technology is a municipal institution having close ties with the university, 800 students taking university courses to degree standard within the college. Altogether, over 7,000 students, full-time and part-time, attend the college of technology. An extension estimated to cost a million pounds was under construction in 1948. Free secondary education was in operation 20 years before it was obliga-

tory, but had to be suspended by government fiat. The local education authority has consistently pursued a progressive policy, and among its institutions may be listed eight municipal grammar schools before the 1944 Act; the school of art, including architecture; the high school of commerce, to degree standard; the college of domestic economy, to teacher training standard; evening classes, in addition to 7,000 students in two women's institutes for technical and domestic subjects; and an adult education institute with which over 100 cultural, educational, and recreative voluntary organizations are in association. Nursery classes were available many years before they received government encouragement. Selective central schools with an advanced curriculum were established in the 1920s.

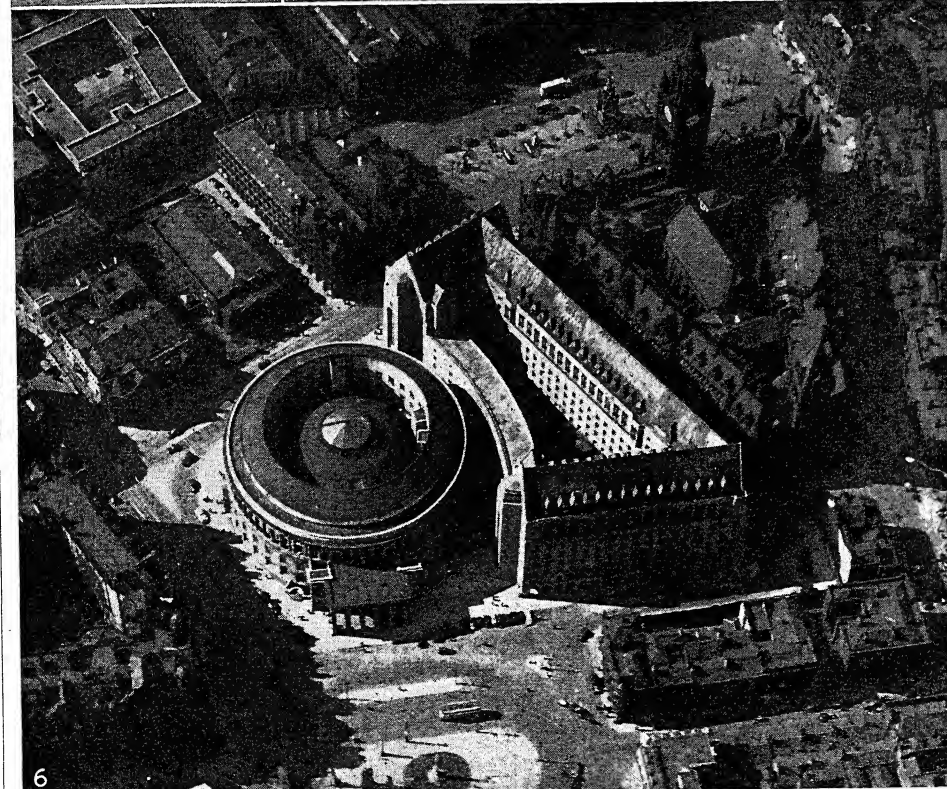
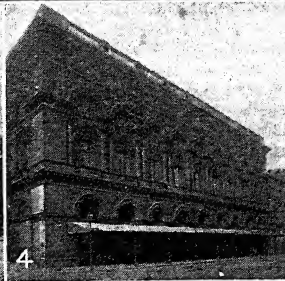
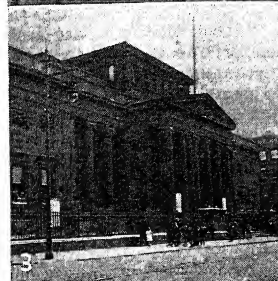
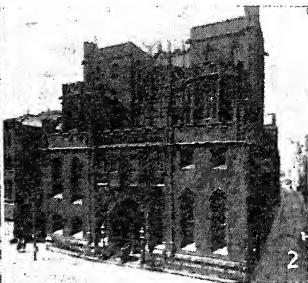
More than 50 organizations carry on cultural activity within the city. They include art, antiquarian, literary, geographical, musical, playgoing, photographic, and other learned societies. Statues of Dalton and Joule are the first figures to receive the visitor within the main entrance to the town hall. Rutherford carried out some of his earlier researches into atomic structure during his period at the

university. Samuel Alexander made important contributions to philosophy during his long connexion with that institution.

C. P. Scott, the famous editor of the Manchester Guardian, is named on the roll of freemen of the city for his distinguished record within it. The Hallé Orchestra, founded over 80 years ago, has an international standing, and its value to Manchester is acknowledged by a Corporation grant and a guarantee. Belle Vue, Manchester's privately-owned stadium and playground, is the scene not only of prize fights and speedway racing, but also of great brass band contests. Two leading Association football clubs are associated with the city—Manchester United and Manchester City. The Lancs co. cricket ground, Old Trafford at Trafford Park, has been the scene of many international matches. The Gaiety theatre, now a cinema, in its heyday under the inspired sponsorship of Miss Horniman wrote a page in the history of the theatre. Tuesday mid-day concerts, the first of their kind to be organized, have been running successfully for many years. Manchester had the first free public library service in the U.K. under a permissive Act of 1850. Two other



Manchester. Plan of the central districts of the city, indicating the railway stations and principal buildings



1. Piccadilly, one of the principal streets. 2. John Rylands library. 3. Art Gallery. 4. Free Trade Hall, destroyed by German bombs in the Second Great War. 5. The cathedral, which dates from the 15th century.

6. Air view of the Civic Centre; the Town Hall with its clock tower faces Albert Square; next to it is the Town Hall extension, opened by King George VI in 1938, and the circular building is the Central Library

# **MANCHESTER: PLACES OF INTEREST IN THE GREAT MANUFACTURING CENTRE**

*Photos: 1, British Railways; 6, Manchester Evening News*

factors have greatly influenced the cultural life of the city: citizens of foreign extraction who settled in Manchester and enriched its culture; and Manchester's great newspaper, the Manchester Guardian, whose enlightened policy has made it one of the great intellectual and social forces of the 19th and 20th centuries.

Municipally, Manchester is a co. borough with a city council consisting of 108 councillors and 36 aldermen, from whom the lord mayor is selected annually for one year, the city council is responsible for the water supply, its three sources being the reservoirs in the Longdendale valley, straddling portions of Cheshire and Derbyshire, Thirlmere and Haweswater in the lake district. It now owns a total of 53,400 acres

as catchment areas, including part of Mt. Helvellyn, and has planted several million trees. By an Act of 1930 the Wythenshawe estate of 5,567 acres was incorporated to house an excess pop. of 100,000.

The city has 34,000 municipal employees, and its assets show a surplus over loan debt of £51,000,000. For a number of years before the Second Great War the city council published an annual review, How Manchester is Managed, and in 1947 it engaged Paul Rotha to produce the documentary film for schools, A City Speaks, at a cost of £17,000.

The Representation of the People Act, 1948, reduced the number of Manchester's parliamentary representatives from 10 to 9.

**HISTORY.** Originally a Roman fort, Mancunium, Manchester was

settled by English and Danes, but has no consecutive history until it became a Norman fief. By 1530 it was the most populous town in Lancs, weaving having been introduced in the 13-14th cent. The Bridgewater Canal (*q.v.*), 1772, and pioneer Manchester-Liverpool rly., 1830, helped its great 19th cent. development.

Politically, Manchester has always been in the forefront. In 1819 an assembly of over 50,000 people met to agitate for much needed reforms. In a panic, although there had been neither riot nor serious disorder, the crowd was charged by yeomanry with drawn swords, and many people were killed and injured. Parliament commended the authorities at the time, but history has emphatically reversed that verdict. The field of



Manchester. Map of the industrial district and manufacturing towns of which Manchester is the centre



Peterloo, on which the Free Trade Hall was built, became the symbol of execration to workers of the world, and inspired one of Shelley's most passionate outbursts. The agitation for the repeal of the corn laws centred in Manchester, and the statues of Cobden and Bright are prominent in the city. Manchester was the citadel of the free trade movement. During one of the dark periods of the American Civil War a Manchester Citizens' meeting sent a letter to Abraham Lincoln urging him to continue the fight against slavery, although unemployment and privation were rampant through the failure of the cotton supply. Lincoln thanked the people of Manchester in memorable terms for their loyal support and encouragement. A famous statue of Lincoln, the gift of the American people, now stands in Platt Fields, one of the city's parks.

**SECOND GREAT WAR.** Manchester suffered two severe raids from the air during the war, one of the night of Dec. 22-23, 1940, which went on for hours and resulted in huge fires and heavy damage to business and residential quarters, hospitals, churches (four were destroyed), etc. In the second on June 1-2, 1941, thousands of incendiary and tons of H.E. bombs fell, in particular in working-class areas. The Free Trade Hall was destroyed, and the royal exchange was severely damaged. A number of flying bombs came down in the Manchester area on Dec. 24, 1944; the only occasion on which these missiles were reported from the N. of England. Total air raid casualties were 559 killed, 1,778 injured and detained in hospital.

**Bibliography.** Story of M., J. F. Wood, 1921; Short History of M. and Salford, F. A. Bruton, 1927; A Century of City Government, S. D. Simon, 1938; History of Local Government in M., 3 vols., A. Redford and I. S. Russell, 1940. *Consult also* City of M. Plan, R. Nicholas (for the city council), 1945.

**Manchester.** City of New Hampshire, U.S.A. It is one of the co. seats of Hillsboro co. The largest city in the state, it stands at the junction of the Piscataquog and Merrimac rivers, 18 m. S.E. of Concord by rly., and 55 m. N.W. of Boston. It has an airport. The Amoskeag falls of 55 ft. in the Merrimac provide power. It is an important cotton centre, owing this position largely to Samuel Blodgett who, after visiting Manchester, England, prophesied that the New Hampshire city

would become "the Manchester of New England." Settled in 1722 and incorporated as Derryfield in 1751, it was renamed Manchester in 1810 and became a city in 1848. The first cotton mills were established here in 1805 and flourished for over 100 years; but after the trade depression of 1929 they were closed down, being later restarted with the help of funds raised by the citizens. Among the outstanding buildings are the Carpenter memorial library, the Currier gallery of art, and the R.C. cathedral. Pop. 77,685.

**Manchester.** Town of Connecticut, U.S.A., in Hartford co. Situated 8 m. E. of Hartford, it is served by the New York, New Haven, and Hartford rly. The township, which has a special legislative charter, includes South Manchester. It is the centre of a region which produces tobacco, vegetables, and fruits. Known as the "Silk City," it is the site of the first silk mills in the U.S., which were established by the Cheney brothers about 1836 and are the only ones which include all the processes required to convert raw silk into finished articles. The city's other dominant manufactures are woollens, paper, rayon, velvet, fibre board, soap, electrical instruments, machinery, tools, chimes, leather goods, and toys. A state trades school is here. Settled in 1672, it formed part of Hartford and later of East Hartford and became a separate municipality in 1823. Pop. 23,799.

**Manchester, DUKE OF.** British title borne since 1719 by the family of Montagu. It derives not from the Lancashire city, but from Godmanchester in Huntingdonshire. Sir Henry Montagu (1563-1642), a noted judge in the time of James I, became lord treasurer and lord privy seal, being made a baron in 1620 and earl of Manchester in 1628. His grandson Charles, the 4th earl, a stout supporter of William of Orange, became English ambassador in Venice, Paris, and Vienna, and was created duke of Manchester in 1719.

William, the 5th duke (1768-1843), was postmaster-general in the Tory cabinet of 1827-30, and governor-general of Jamaica. William, the 7th duke, married Louise, countess von Alten, afterwards wife of the 8th duke of Devonshire and a famous society figure. William Angus Drogo, the 9th duke, succeeded to the title at the age of 15, when he was

still at Eton. He was captain of the Yeomen of the Guard, 1906. In 1932 he published *My Candid Recollections*. He died Feb. 9, 1947, and was succeeded by his son, Alexander George Francis Drogo Montagu (b. Oct. 2, 1902) as 10th duke.

The duke's seats are Kimbolton castle, Huntingdon, and Tandragee castle, co. Armagh. The eldest son bears the courtesy title of Viscount Mandeville.

**Manchester, EDWARD MONTAGU, 2ND EARL OF (1602-71).** English parliamentarian leader in the Civil War.



2nd Earl of Manchester, English parliamentarian

The eldest son of the first earl, and educated at Sidney Sussex College, Cambridge, he represented Huntingdon in parliament 1623-26. In 1626 he was

raised to the peerage as Baron Montagu, though generally known by the courtesy title of Viscount Mandeville. He sided with the Puritans in the quarrel with the king, and became one of the chief leaders of the popular party among the lords. His name was added to those of the five members who were impeached for treason by Charles I in 1642.

In the same year he succeeded his father as earl of Manchester and became a leader in the parliamentary army. He thought, however, that peace could better be re-established by negotiation than by fighting. He was nominally in command at Marston Moor, and won the second battle of Newbury, but quarrelled with Cromwell, and was deprived of his command by the self-denying ordinance. He opposed the trial and execution of the king, and retired when the Commonwealth was established. He took part in bringing about the Restoration, and was in 1661 made K.G. He died May 5, 1671.

**Manchester and Liverpool District Bank.** Oldest joint stock bank in England. It was established in 1829, chiefly through the efforts of a man named Joseph Macardy, who had conceived the plan of extending a bank's sphere of influence by means of a network of branches. With the idea of expansion as one of its *raison d'être* the bank has had a long series of amalgamations and mergers to record. One

of the most interesting of its satellites is the Lloyd Entwistle, Bury, and Jervis Company. The history of this firm can be traced back to 1771 and it was acquired by the District Bank in 1863. Another interesting association is that with the Saddleworth Banking Company which, through its connection with Buckley & Co., has local history going back well into the 16th century.

In 1924 the Bank dropped its more cumbersome title and adopted the simplified form of District Bank Ltd. Eleven years later the most important amalgamation to date took place, that with the County Bank. This merger placed the District among the seven largest banks in the country and brought its total number of branches up to nearly 600. In 1870 the Bank was incorporated under the Companies Act and received from the Heralds' College a grant of arms. The shield copies that of the borough of Manchester, but it is silver instead of red, and has two bendlets gules instead of three golden ones. The crest is a ship, which may be taken as the emblem of commerce, while the motto is *Decus Prudentiæ Merces*. "Honour, Wisdom's Meed." The Bank's total assets exceed £225,000,000, the authorised capital is £10,560,428.

**Manchester College.** A residential theological college in Oxford. It was founded in 1786 in Manchester, one of a succession of academies, the earliest being that opened by Richard Frankland at Rathmell in 1670. Its chief purpose was to give a training for the ministry of religion among dissenters. After being located in York and again in Manchester it was transferred to London in 1853, and from there in 1889 to Oxford. In 1893 the present fine buildings were erected in Mansfield Road. It is open to students of any denomination, without doctrinal tests, but its main support and constituency have been Unitarian. Among its past principals were James Martineau, James Drummond, J. Estlin Carpenter, and L. P. Jacks. Scholarships may be awarded for research in religion, theology, or ethics. Generous exhibitions are granted to external students for their undergraduate course prior to entering the college and to internal students for the ministry.

**Manchester Guardian, THE.** English daily newspaper. Founded May 5, 1821, by John Edward

Taylor (1791-1844) as a four-page weekly at 7d., it began daily publication at 2d. on July 2, 1855, and was issued at 1d. from Oct. 5, 1857, until the First Great War. It was edited by its founder, 1821-44; by his eldest son, R. S. Taylor, 1844-48; by J. Garnett, 1848-61; by J. E. Taylor, 1861-71; by Charles Prestwich Scott (*q.v.*), a nephew by marriage of the founder, 1872-1929; by E. T. Scott, 1929-1932; by W. P. Crozier, 1932-1944; and by A. P. Wadsworth since 1944. A London office was opened 1868, and a weekly edition in July, 1919.

The Manchester Guardian is one of the most influential papers in the kingdom, notable for the standard of its criticism, its independence, its foreign service, and the fullness and value of its general news and commercial intelligence. Among its eminent recent contributors may be mentioned C. E. Montague, Allan Monkhouse, Samuel Langford, Neville Cardus, Howard Spring, and Ivor Brown.

*Consult The Manchester Guardian: A Century of History*, W. H. Mills, 1921; C. P. Scott, 1846-1932; *Making of the Manchester Guardian*, various hands, 1947.

**Manchester Players.** British theatrical company. Miss A. E. F. Horniman, who had already launched the Irish Players on their career in the Abbey Theatre, Dublin, began a similar enterprise with the Manchester Players at the Midland Theatre, Manchester, in Sept., 1907. In the spring of 1908 she bought the Gaiety Theatre, Manchester, and within two years built up a repertory of the very first rank.

Among its most noteworthy productions were John Galsworthy's *Strife*, *Justice*, and *The Silver Box*; *The Voysey Inheritance*, by Granville Barker; *Hindle Wakes*, by Stanley Houghton, a comedy of Lancashire life; and plays by Charles McEvoy, Harold Brighouse, St. John Hankin, and Bernard Shaw. Among notable members of the company may be mentioned Sybil Thorne and (Sir) Lewis Casson; the latter was director of the theatre 1911-14. In 1920 Miss Horniman sold the Gaiety Theatre, Manchester, owing to lack of support for her movement, and the company was disbanded. *See* Horniman, A. E. F.; *Repertory Theatre*.

**Manchester Regiment.** Regiment of the British army. It was formed in 1881 by amalgamating the 63rd and 96th Foot and two

battalions of the Royal Lancashire Militia; the 63rd becoming the 1st and the 96th the 2nd battalion of the new regiment. The 63rd had been formed in 1758 from the 2nd battalion of the 8th Foot, now the King's Regiment, which was raised in 1685. The 63rd Foot first saw active service at Guadaloupe in the West Indies, and after fighting in Flanders again went to the West Indies where it gained the honours Martinique, 1794, and St. Lucia, 1796. In the Crimea the regiment was at the battles of Alma and Inkerman, and the siege of Sevastopol, and it served in the Afghan campaign of 1879-80.

The 96th Foot had been raised for service in the Napoleonic wars and was with Abercromby in Egypt in 1801 and later fought under Wellington in the Peninsular campaign. Disbanded in 1818, the 96th Foot was reformed in 1824 and fought throughout the New Zealand War of 1846-47. The Manchester Regiment's first engagement was in the S. African War, in which it played a prominent part under Sir George White at Elandslaagte and at the siege of Ladysmith.

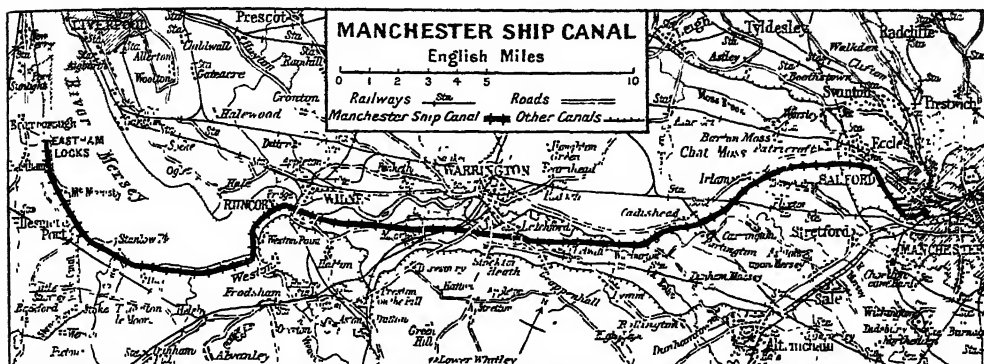
Forty-two battalions of the Manchester Regiment were raised in the First Great War and gained the honours: Mons; Givenchy, 1914; Ypres, 1915, '17, '18; Somme, 1916, '18; Hindenburg Line; Piave; Macedonia, 1915, '18; Gallipoli, 1915; Megiddo; and Bagdad.

Of the five service battalions that fought in the Second Great War, the 1st was captured at Singapore, the 2nd served in Burma, the 8th was at Malta throughout the air siege, and the 9th took part in the Sicily and Italy campaigns.

**Manchester School.** Name given in the 19th century to a group of politicians and economists and the ideas associated with them. Their leaders were Cobden, Bright, and Milner Gibson, and their headquarters were in Manchester, where the Anti-Corn Law League was founded in 1838. Founding their principles on utilitarianism, they believed in non-interference in industry by the state, in free trade, and peace. The period during which the ideas of the school were dominant is generally regarded as 1845-75. *See* Free Trade; Utilitarianism.

**Manchester Ship Canal.** Canal connecting Eastham on the Mersey with Manchester. The long-contemplated project for making Manchester an inland seaport began to





Manchester Ship Canal. Map showing the course of the canal from Eastham, on the Cheshire side of the Mersey, to Manchester, which affords sea-going vessels of large tonnage access to the city

take practical shape in 1882, when Daniel Adamson, ironfounder, called a meeting of the mayors of Lancashire manufacturing towns to consider the construction of a tidal waterway between Liverpool and Manchester.

His enterprise and enthusiasm led to the undertaking of the work, and in spite of many initial difficulties the construction, begun in 1887, was completed Dec. 16, 1893, and the Manchester Ship Canal was formally inaugurated by Queen Victoria, May 21, 1894. Traffic had begun in Jan. In 1905 Edward VII opened dock No. 9. The canal is 35½ m. in length, and the districts within a 50 m. radius of Manchester have the densest population in the world. The original contract was £9,000,000, but additional costs brought the capital expenditure up to over £19 millions.

The ship canal has had an enormous influence upon the commercial importance and development of Manchester, which now ranks as the fourth port in the U.K. It is provided with the most adequate dock accommodation, appliances, and modern equipment; with an elaborate system of transit sheds, the handling of cargo is expeditious; regular lines of steamers enable exporters to ship direct to the principal foreign ports, and the Bridgewater department deals with the traffic between the docks and inland towns. The tonnage figures, which were 925,659 tons, value £97,901, in 1894, were 6,409,873 tons in 1938; revenue value in 1944 was £1,455,000.

The entrance to the ship canal is at Eastham, 19 m. from the bar at the mouth of the river Mersey, and the access is from the sea by way of the lower estuary. The canal skirts the shore of the estuary up to Runcorn, terminating at Trafford Bridge in Man-

chester. It is divided into four reaches, and the passage is about seven hours, allowing about half an hour for locks. The customs port begins at the E. termination of the Port of Liverpool, and includes the rivers Mersey, Irwell, and Weaver, and the canal from Eastham to Hunt's Bank.

The depth of the canal is 28-30 ft., maintained by dredging, and the bottom width is 120 ft. (except near Latchford, 90 ft.). At Manchester are three graving docks and a pontoon dry dock, and a second pontoon dry dock is at Ellesmere Port. Twin-screw steamers of 12,500 tons navigate the canal. The dock estate covers 206½ acres, water space 120 acres, and the quay and storage area is 286½ acres. Adjoining on the S. side is the huge Trafford Park estate, 1,183 acres, with 3 m. of frontage to the ship canal and 3½ m. to the Bridgewater Canal; here are located some 125 firms engaged in engineering and other industries. In the cold storage department, with a capacity of 1,000,000 cu. ft., 10,000 tons of meat and perishable goods can be preserved. See Aqueduct; Bridgewater Canal; consult History of the Manchester Ship Canal, B. Leech, 1907.

**Manchester Square.** London square. It lies between Baker Street and Thayer Street, Marylebone, W., and, built in 1770-88, was named after the 4th duke of Manchester, who built Hertford House (q.v.). Lady Blessington, William Beckford, and Matthew Arnold were among notable residents. The site was once known as Maribone Gardens, which extended to Wimpole and Harley Streets.

**Manchester University.** Educational establishment in England, in full the Victoria University of Manchester. In 1851, through the munificence of John

Owens, a Manchester merchant, a college was opened in the city for higher education. In 1880 this became one of the colleges of Victoria University, founded in that year; but in 1903 the university, which included colleges at Liverpool and Leeds, was dissolved, and Manchester obtained a separate university. In 1872 the Manchester school of medicine had been united with Owens College.

The university has faculties and departments for every kind of study. Normal



Manchester University arms

degree courses, open to men and women, are three years. In arts a high standard is maintained, while great attention is paid to science, medicine, and technology, as well as to other modern subjects, e.g. commerce and administration. The municipal college of technology has been associated with the university since 1905, the principal of the college being dean of the faculty. The buildings, near the centre of the city, include the original Owens College and subsequent additions, as well as the Manchester museum, with the Flinders Petrie Egyptology collection. The library has over 300,000 vols. A new arts library was opened in 1936. There are laboratories for study and research in electro-technics, radio-activity, etc. In 1948 there were over 4,000 students on the books. Various theological colleges are recognized by the university. See Gown col. plate.

**Manchineel** (*Hippomane mancinella*). Tree of the family Euphorbiaceae. A native of Central



Manchinel. Spray with flower, foliage, and fruit. Inset, flower head.

America and the W. Indies, it has shining egg-shaped leaves with toothed edges, small inconspicuous flowers, and yellowish-green fleshy berries. It abounds in milk-like and intensely poisonous sap. A single drop of the juice in contact with the eyes will cause blindness for days, and similar results arise from the smoke of its wood when it is burnt.

**Manchu.** People of pure Tungus stock in E. Asia. Tall, slender, level-eyed, medium-headed, they betray contact with the prehistoric Caucasoid migrations. Originally pastoral nomads in the Sungari basin, they are now peaceably settled husbandmen, professing Lamaism and forming one-tenth

of the Manchurian population. The women's feet are unbound. Their Altaic speech is written in a modified Aramean script resembling Mongolic. The Tsing dynasty which they imposed upon China in 1644 endured until the republican revolution of 1912. *See Asia.*

**Manchukuo.** Former puppet state of Asia. Proclaimed an independent state by Japan in 1932, it comprised the three N.E. provinces of China, Liaoning, Kirin, and Heilungkiang, together with Jehol. With Japan's defeat in 1945, Manchukuo ceased to exist.

**Manchuria.** Generic but non-official name for the North-Eastern Provinces of China. Nine in number, they are named Antung, Heilungkiang, Hokiang, Hsingan, Kirin, Liaoning, Liaopei, Nunkiang, and Sungkiang, and each has its separate entry in the pages of this Encyclopedia. Before Sept., 1945, the territory comprised three provs., Heilungkiang, Kirin, and Liaoning. Its area is est. at 503,013 sq. m. and pop. 43,233,954. Mukden, Harbin, Changchun, and Antung are the chief cities. Manchuria is bounded N. by Siberia, E. by Korea, and W. by Mongolia.

Two mountain ranges, Khingan Mts. and Changkwangsai Mts., run from S. to N., with peaks ranging from 3,000 to 8,000 ft. They are

rich in timber and minerals, especially coal. The N. boundary is the Amur, which receives the Argun, Kumara, Sungari, and Ussuri. Of these tributaries the Sungari is the longest; with its tributary, the Nonni, it almost encircles the Little Khingan Mts. In the S. the Tumen, Yalu, and Liao-ho drain fertile plains which form some of the richest land in E. Asia.

Manchuria extends from 39° 40' N. lat. to 53° 50' N. lat., and has a climate comparable with that of the N.E. United States and the maritime provinces of Canada. The S. ports, Dairen (Dalny) and Lushun (Port Arthur), are ice-free all the year, but other ports and the rivers are frozen for about six months; the ice is generally thick enough to bear heavy traffic. The rainfall is, on the whole, slight; most of it falls in Aug., when floods on the rivers interfere with traffic. Snow falls to a depth of 1½ ft., and sledges are used over it in the towns and along the highways, which are but dirt-tracks across the countryside.

#### Agriculture and Industries

All the valleys are fertile and on the whole, well cultivated; soya beans, kaoliang, millet, maize, and wheat occupy most of the arable area. Minor crops are red beans, oats, hemp, and tobacco. In the S. tussore silk is obtained from wild silkworms reared among the leaves of a species of oak; ginseng is found wild and is cultivated in Kirin. Cattle kept for milk and meat, and horses, mules, and donkeys reared for draught purposes, are common domestic animals; sledge dogs are reared in the N.E. and camels near Mongolia.

Gold is mined in the N. and coal in the S., while silver, lead, copper, iron, and salt are also found. The extraction of bean, casor, and other oils is a valuable industry in normal times at Mukden, which also had flour milling, brewing, bricks and earthenware establishments. Rlys. radiate from Harbin; the 5-ft.-gauge section of the Trans-Siberian Rly. runs N.W. to Chita and S.E. to Vladivostok. S.W. a line goes to Mukden, changing to the 4 ft. 8½ in. gauge at Changchun; three lines go from Mukden to Shanhaikwan and Tientsin to the system of China proper, to Antung to join the Korean system, and to Lushun.

About the beginning of the 17th century Nurhachi, a Manchu ruler, had firmly established himself in Manchuria, and in 1623 he transferred his capital to Mukden. His son conquered Korea and S.



Manchuria. Map of the northernmost territory of China, through which pass the railways connecting China with the western world

Manchuria, and the next ruler overthrew the Ming dynasty of China. There are hardly a million Manchus left in their former home, most of the present inhabitants being immigrant Chinese. This territory has been desired by foreign powers, on account of its fertility and its ice-free harbours. In 1895, by the treaty of Shimonoseki, Japan obtained part of S. Manchuria, but gave it back on the advice of the powers. Russia almost immediately obtained rly. rights and a lease of Liao-tung. At the Portsmouth conference in 1905 Japan gained Liao-tung and rly. concessions in S. Manchuria; in 1917 the Japanese S. Manchurian rly. obtained control of the Korean rly. system and so gained a through route from S. Korea to Changchun and the Trans-Siberian rly. system.

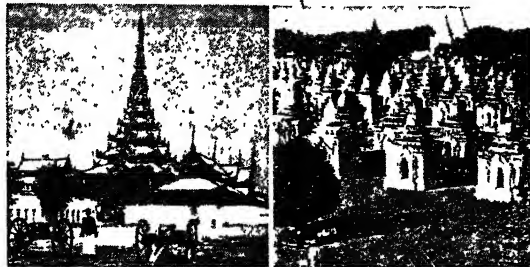
In spite of her agreements with the western powers to give up her claims on China's north-east, Japan continued to covet the territory. Various incidents were provoked which led to open seizure of the whole territory in 1931. The Lytton commission, appointed by the League of Nations, denounced this action as aggression, and Japan left the League. The territory thenceforward became a base for operations against China's northern provinces. Full-scale, though undeclared, war followed an incident near Peiping, on July 7, 1937. For eight years the N.E. provinces served as an arsenal and supply base for Japanese troops operating elsewhere in China. In Aug., 1945, Soviet troops invaded the territory and engaged Japanese forces till their capitulation on Aug. 15. The Russians evacuated all Manchuria except Port Arthur by May, 1946, taking, however, much industrial equipment as reparations. Their withdrawal was preceded by tension between the Chinese Communists there and the central Chinese govt., and was followed by open warfare between them. See China in N.V.

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**Mandaeans.** People of Semitic stock in S. Babylonia and Khuzistan. Upon the old Babylonian popular religion they en-

grafted Gnostic elements. Their sacred books, notably the Genza or Treasure, written in S. Babylonian Aramaic dialect and script, and including Hebrew and Christian traditions, were collected about the 1st century A.D. Their characteristic rite is immersion in running water. They are a dwindling community of traders and artisans numbering fewer than 4,000.

**Mandalay.** Division and dist. of Burma. The division comprises the upper valley of the Irawadi. While the Mandalay dist. in the S. of the div. has 160 persons per sq. m., the four dists. to the N. have fewer than 30. The S. dist. is



Mandalay, Burma. Left, palace of Theebaw, the last king. Right, some of the 450 pagodas forming the Kuthodaw, or temple

slightly cultivated (13 p.c. of the area), chiefly for rice; the rest is almost uncultivated. The S. dist. is part of the dry area of Central Burma, the annual rainfall being 33 ins., while that of the remainder exceeds 60 ins. and the coasts of Burma receive at least 100 ins. The Mandalay Canal, 42 m., irrigating 125 sq. m., was opened in 1902, running parallel to an old Burmese waterway. Div.: area 32,476 sq. m.; pop. 1,907,703. Dist.: area 2,117 sq. m.; pop. 408,926.

**Mandalay.** A city of Burma, formerly the capital of Upper Burma. A modern river port, its situation on the Irawadi 350 m. almost due N. of Rangoon destined it to be the commercial centre of inland Burma. To the S. the Sittang valley leads to Rangoon and the Gulf of Martaban; S.W. lies the Irawadi, N. the Upper Irawadi; and E. the Myitnge yield access to N. Burma. Except to the S.W. all these routes are followed by rly. lines, while a fourth line leads up the Chindwin Valley to the N.W. The city lies in the dry belt of Burma, surrounded by a broad alluvial plain. In 1860 its site was a jungle swamp.

The early town was a square, surrounded by a wall with curious wooden towers over its gates. It contained the royal palace within

a square enclosure, 370 yds. each side. The front of the palace included the great hall of audience, made of elaborately carved and gilded teak timber. Within the enclosure also stood the treasury, arsenal, mint, and the stables of the white elephant. From 1857 Mandalay was the capital of the Burmese kingdom; in 1885 it was occupied by the British who captured King Theebaw. A great fire in 1892 destroyed considerable portions of the city, and a new city was built. The old walled town is now known as Fort Dufferin; outside its walls are numerous temples, pagodas, and monasteries.

Of these the most remarkable is the Kuthodaw, or temple, with its hundreds of pagodas, arranged to form a square, about 800 yds. each side. Mandalay agricultural college is part of the university of Rangoon.

In the Second Great War Mandalay, wrecked by enemy bombing, was evacuated by the British and occupied by the Japanese May 1, 1942. British troops re-entered the N. outskirts of the city March 8, 1945. By the 12th Fort Dufferin, with its massive walls, was the only serious obstacle remaining, but this the Japanese defended fanatically, and the end came only after Mitchell bombers, on the 19th, breached the wall, with 2,000-lb bombs. Next day at 12.45 the besieging troops were astonished to see an Anglo-Burman walk out of the N. gate carrying a Union Jack and a white flag. The Japanese had pulled out of the fort at noon, leaving in it only 346 refugees, including a number of missionaries. See Burma Campaign.

The pre-war pop. was 147,932. Kipling's famous verses, On the Road to Mandalay, included in his Barrack-Room Ballads, 1892, give the flavour of the early British period of occupation.

**Mandamus** (Lat., we command). English court order of a high nature, made by the king's bench division. It is made only where there is no other remedy, and is addressed to a court, a person, or a corporation, commanding the performance of some legal duty of a public nature—e.g. to a court of petty session commanding it to hear and determine a case according to law, or to a municipal body, ordering the

provision of an isolation hospital. It enforces some private rights when withheld by public officers. Non-compliance is contempt of court. The procedure was simplified in 1938. See Writ.

**Mandarin** (ultimately from Skt. *mantrin*, counsellor). Term used under the Empire by Euro-



Mandarin of Hanyang in official robes

peans for a Chinese official, civil or military. There were nine grades, distinguished by the button on the cap, the embroidery on the robes, and the girdle-clasp. The buttons, the same for civil and military mandarins, were in order of rank as follows: A ruby or a transparent red stone, a red coral button, a sapphire button, an opaque blue stone, a crystal button, an opaque white shell button, a plain gold button, a worked gold button, and a worked silver button. The embroidery for civil mandarins represented birds, and for military mandarins wild beasts. The Chinese spoken by officials and educated people is called mandarin (Kuan-hua). It is now known as gwoyeu. The term was formerly applied to other Asiatic officials besides Chinese.

**Mandarin Duck** (*Dendrocygna galeuculata*). Bird of the duck family found in China and E. Asia. The plumage of the male is brilliant, the head bearing an erectile crest of green, white, and brown. One of the scapular feathers is developed into a large upturned fan of bright chestnut with a broad purple band, which adds much to the striking appearance of the bird. The female is soberly clad in mottled brown.

Owing to their beauty, these ducks are in favour for ornamental waters. See Duck.

**Mandasor**, **MANDSAUR**, OR **MANDESUR**. Town in Gwalior state, Madhya Bharat, India. It is 80 m. N.W. of Ujjain on the Malwa section of the Rajputana-Malwari. It gives its name to the treaty

which in 1818 ended the Mahratta-Pindari war. Here is centred the poppy-growing industry of Malwa.

**Mandate**. In law, a command, charge, or commission. A consignment of goods to be carried, or to have something done to them, is sometimes called a mandate; the term derives from the Roman *mandatum*, a contract by which one person undertook to perform some service for another without payment, if guaranteed against loss. In canon law a mandate is a command by the pope to put a certain person into the first vacant benefice in the gift of the individual to whom the command is addressed. Politically, the word is used to signify a charge laid by electors upon their representatives. The Labour government of 1945 used the expression freely in support of their more far-reaching measures for the nationalisation of various industries.

**Mandated Territories**. Colonial territories taken by the Allies from Germany and Turkey at the end of the First Great War and administered on a trusteeship for the inhabitants under the general control of the League of Nations. The territories fell into three classes: (a) those considered merely to require assistance in administration for a time, e.g. Palestine, Syria; (b) backward territories which were to be administered on a basis that included the grant of equal opportunities for trade to other members of the League, e.g. Tanganyika; (c) those to be administered by the controlling power as parts of its own territory—e.g. S.W. Africa.

Mandates were accepted by Great Britain for Iraq, Palestine, Transjordan, Tanganyika Territory, and parts of Cameroons and Togoland; by Australia for New Guinea and Nauru; by New Zealand for Samoa; by South Africa for S. W. Africa; by France for Syria, Lebanon, and parts of Africa; by Belgium for Ruanda-Urundi (German E. Africa); and by Japan for groups of islands in the Pacific.

The League mandates were by nature impermanent, and that for Iraq ceased when the country was admitted to the League in 1932. The Syrian and Lebanese mandates, though juridically still

in force, were *de facto* terminated by the treaty between France and the new republics, Dec. 27, 1943. The position concerning the Palestine-Transjordan mandate was more complicated; while in Palestine there was little sign of a settlement of the Arab-Jewish question, Great Britain recognized Transjordan as a sovereign independent state in 1946. The remaining mandates were surrendered to the United Nations with the acceptance of the trusteeship system in 1945-46.

**M and B**. A term in England designating drugs of the sulpha group. It comes from the initials of the firm of May and Baker, manufacturing chemists. It describes a bactericidal agent which inhibits the growth of organisms by interfering with their metabolism, and so is used in treatment of pneumonia and other diseases. Gerhard Domagk, of I. G. Farbenindustrie, discovered the principle while doing research work on aniline dyes. See Sulphonamides.

**Mandel**. **GEORGES** (1885-1944). French politician. He was born June 5, 1885, son of a Jewish draper. He contributed to *L'Aurore*, a newspaper owned by Clemenceau, and was assistant chief of cabinet in 1906 during the latter's first ministry. When Clemenceau became prime minister in 1917, Mandel was made director of the cabinet, and in 1937 was minister for the colonies under Édouard Daladier. In June, 1940, he became minister of the interior. After the 1940 armistice he fled to Morocco, but was brought back to France. One of the defendants at the Riom (*q.v.*) trial, he was handed over to the Germans and put in Buchenwald concentration camp. Brought back to Paris as a hostage, he was murdered July 8, 1944, while ostensibly being taken to Vichy. Two men were executed for the crime Oct. 28.

**Mandelic Acid** OR **PHENYLGLYCOLIC ACID**. Crystalline body discovered by Winckler in bitter-almond water. It is prepared by converting benzaldehyde into mandelonitrile and hydrolysis of the latter. Mandelic acid was introduced into the British Pharmacopoeia in 1941. It has been used in medicine in the treatment



Mandarin Duck. Drake of this Chinese aquatic bird  
W. S. Berridge, F.Z.S.



Georges Mandel,  
French politician

of urinary infections, especially in the form of its ammonium salt.

**Mandeville**, BERNARD (c.1670–1733). A Dutch-English satirist. Born at Dordrecht, Holland, and educated at Rotterdam and at Leyden, where he took his degree of M.D., he settled in London and practised as a physician. He died Jan. 31, 1733. His *Fable of the Bees*, which grew from a small volume of doggerel verse, *The Grumbling Hive*, 1705, into an elaborate treatise, was condemned by the Middlesex grand jury and attacked by William Law, Berkeley, and others. In a vein of coarse and impish wit and paradox he pictured a hive of vicious bees whose prosperity was ruined by their becoming virtuous. Maintaining that private vices were public virtues, he professed to find some ignoble and grossly selfish motive at the base of virtue.

**Mandeville**, GEOFFREY DE (d. 1144). English earl. Constable of the Tower and created earl of Essex in or before 1141, he took the side of the empress Matilda (or Maud), daughter of Henry I, against Stephen, but later deserted her cause and assisted in the siege of Winchester. By grants from Stephen he came to monopolise the judicatory power in Hertfordshire, Middlesex, and Essex, and surpassed all the nobles in wealth and importance. He conspired once more with the empress, was arrested, set at liberty again, once more revolted, and, retiring to the fen country, led raids into the eastern counties. In one of these raids he was fatally wounded. This figure of feudal anarchy was the subject of a monograph by J. H. Round, 1892.

**Mandeville**, SIR JOHN. Reputed English author of a medieval book of travels. The earliest known version, written between 1357 and 1371, is in French, and the earliest English text is a faulty adaptation of it. The author of the travels states that he was born at St. Albans and had travelled widely in the East. A Latin version made at Liège declares that the book was written there, and a tomb was to be seen at Liège until 1798 with an inscription recording that Mandeville died there Nov. 17, 1372. The real author, however, appears to have been a Liège professor of medicine, Jehan de Bourgogne. The first part of the *Travels* is a guide to the Holy Land for the use of pilgrims, plagiarised from a German traveller, William of Boldensele, and from others. The second part,

which describes more distant travels in Asia, is taken from Odoric of Pordenone and others. Among the marvels popularised by the book were those of Prester John, the fountain of youth, the earthly paradise, and the vegetable lamb.

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**Mandi**. Former Punjab hill state, from 1948 part of the Himachal union, India. Drained by the Beas, much of the area is forested, the deodar and blue-pine yielding valuable timber. It has an annual rainfall of 50 ins. Rice, wheat, and pulses are grown, a third of the fields yielding two crops a year. The capital, Mandi, is on the Beas, here spanned by a fine iron bridge. Founded in 1527, it is a trade centre for Sinkiang, and is connected with the railroad at Pathankot, 131 miles to N.W. by a good road. A hydro-electric scheme was opened in 1932. The area of the state is 1,139 sq. m.; pop. 232,593.

**Mandible**. Term applied to the jaw of vertebrates, and to the jaws or pincers of insects, crustaceans, and other animals. *See* Animal.

**Mandingo** OR MANDE. Name denoting a sub-group of W. Sudanic languages. The negroid peoples, numbering several millions, by whom they are spoken, include the Soninke or Sarakole of the middle Senegal; the Bamana or Bambara of the upper headwaters; the Vai of S.W. Liberia; the upper Niger Malinke; many forest tribes in Sierra Leone and Liberia; and Caucasoid tribes such as the Susu. This virile stock established the powerful medieval Mahomedan kingdom of Mali,



Mandrake. Foliage, flowers, and root. Inset, fruit

which faded before the Songhai and Fula powers. The most typical tribes, athletic, fair, full-bearded, dignified, are now herdsmen, agriculturists, traders, and craftsmen. *See* Africa; Mendi.

**Mandla**. Dist. and town of India, in the Jubbulpore division, Madhya union. The district is situated N.W. of the Maikala Range, and is largely uncultivated, forested plateau. It is drained by the headstreams of the Narbada. A short rly. connects Nainpur with the town of Mandla, which has 37 temples built between 1680 and 1858 on the banks of the Narbada. Area, 5,115 sq. m. Pop. of dist., 504,580; town, 11,700.

**Mandoline**. Musical stringed instrument with pear-shaped body and short neck. It is of the lute



Mandoline of Neapolitan type, with four pairs of strings

class but has pairs of strings tuned in unison. In the larger Milanese mandoline, with five or six pairs of strings, the tuning is similar to that of the lute; but the much commoner Neapolitan mandoline has four pairs of strings, tuned in fifths like the violin:

Mandoline strings are of gut for the lowest pair, and of steel for the others.

They are played with a plectrum, the special effect being produced by a tremulous movement of the hand, which keeps the strings in continuous vibration.

**Mandrake** (*Mandragora officinarum*) OR DEVIL'S APPLES. Perennial herb of the family Solanaceae. A native of the Mediterranean region, it has a thick, fleshy root, and large, oblong, lance-shaped leaves. The flowers are white or bluish, with network veining. The plant has a fetid smell and all parts of it have poisonous properties.

The mandrake was formerly used as a narcotic; the classical writers knew of it, and Shakespeare speaks of it as "the insane root that takes the reason prisoner." The forking of the root often produces a resemblance to the human figure, and from early times this, and its poisonous nature, surrounded the plant with superstitious beliefs. Its possession was said to bring good



fortune in all the affairs of life and it was pulled from the earth by attaching to it a dog, which, it was alleged, died of fright when the plant shrieked on being uprooted.

**Mandrill** (*Mandrillus sphinx*). Large species of baboon, found on the W. coast of Africa. The muzzle



Mandrill. Specimen of the brilliantly coloured West African baboon  
W. S. Derridge, F.Z.S.

somewhat suggests the snout of a pig, the nose is a brilliant vermillion, and the swellings on either side of it are bright blue, and deeply ridged. The skin of the hinder part is shaded with purple, and the great callosities on the buttocks are bright red. The fur is olive brown, with a dark crest on the head, and a yellowish beard on the chin, which tends to turn white with age. The canine teeth are of great size and length. In its native state it goes about in troops, and is said to live on insects. In captivity it is morose and ferocious.

**Mandu** or **MANDUGARH**. A ruined city in the Mahratta state of Dhar, 55 miles southwest of Mhow in Central India. Mandu was once the capital of the ancient kingdom of Malwa. To its buildings, of which the Jami Masjid is still in a good state of preservation and regarded as the best example of Afghan architecture in India, the great ruler Hoshang Shah (1405-34) made notable contributions. The city is on the summit of the Vindhya Hills, 1,944 ft. above sea level. It was once 37 m. in circumference and its ruins occupy 8 sq. m. Sir Thomas Roe, ambassador of James I, entered Mandu in the company of the emperor Jehangir, whose procession included 500 elephants.

**Manduria**. Town of Italy, in the prov. of Lecce. Situated 22 m. by rly. E. of Taranto, it stands near the site of an older Manduria,

of which remains have been found. From tombs in the vicinity many gold ornaments, etc., have been recovered. An important stronghold in the 4th century B.C., it was captured by Rome, 209 B.C., and destroyed by the Saracens in the 10th century, the inhabitants building the present town, which, until 1700, was called Casalnovo, i.e. new village. Pop. 13,000.

**Mandvi**. Harbour of India, on the N. shore of the Gulf of Cutch, Bombay. It is the largest town in the state of Cutch. Pop. 28,000.

**Manes** (Lat., the good). Among the Romans and Italians generally, a name for the spirits of the dead. In imperial times they were regarded as gods, as is shown by the letters D.M.S. on sepulchral monuments — *Dis Manibus Sacrum*, sacred to the divine Manes. A general propitiatory festival of All Souls (*Feralia*) was held in their honour, Feb. 17, at which various offerings of food were brought to the tomb. Three times a year the Manes were supposed to come forth from their home in the underworld, to roam about the earth. Pits were dug near towns, resembling inverted domes, covered by a stone, called *lapis manalis*, which was removed with great ceremony on these occasions. The Manes are good, kindly spirits, as opposed to the Larvae and Lemures, bogies and hobgoblins. (Pronounced in two syllables.)

**Manet**, **ÉDOUARD** (1832-83). French painter. Born in Paris, Jan. 25, 1832, he studied under



Édouard Manet,  
French painter

Couture, and in 1863 became the leading spirit of an iconoclastic group known as the *École de Batignolles*, which included Degas, Monet, Sisley, Fantin-Latour, and Pissarro. Manet broke, at least outwardly, so completely from classical traditions of beauty, form, and design that many of his works were the objects of general abuse, e.g. his *Déjeuner sur l'herbe*, now in the Louvre, which was rejected



Édouard Manet. His fine painting, *The Bar at the Folies-Bergères*, now in the National Gallery, London

by the Salon in 1863 and exhibited in the Salon des Refusés the following year. His great *Olympia*, 1864 (Louvre), Christ Reviled by the Soldiers, 1865, and *Angelina*, 1866, were similarly rejected and scorned. His paintings were derisively labelled impressionist. But his influence on Monet was such that the latter adopted the label proudly (see Impressionism).

While serving as a gunner during the Franco-Prussian war, 1870-71, Manet perceived the beauty of open-air painting, and the popularity of the *plein-air* school owed much to his subsequent work. His later paintings, e.g. *Le Bon Bock*, 1873, and *The Bar at the Folies-Bergères*, 1882 (now in the National Gallery, London), won him wide esteem at last, and he has since become recognized not only as an important figure in the history of art but as in himself a great painter whose works have an intrinsic beauty and reveal an uncommon mastery of technique. Zola, who supported him throughout the controversy, wrote a biography, 1867. Consult also *Life* by J. E. Blanche, Eng. trans. 1925.

**Manetho** (Egypt. Manethoth, given by Thoth). Egyptian priest and writer. Born at Sebennytus (Semenud) in the Nile delta, he became chief priest and keeper of the sacred records at Heliopolis in the reigns of Ptolemies Soter and Philadelphus (323-247 B.C.). He was the author of *Aegyptiaca*, a history of Egypt from the earliest times to Alexander the Great. Some fragments are preserved in Josephus and in later chroniclers. A poem called *Apotelesmatika*, dealing with the influence of the stars on men's lives, formerly attributed to him, was written by a later astrologer bearing the same name. See Egypt.



**Manettia.** Genus of evergreen climbing plants, of the family Rubiaceae. Natives of tropical America, they have more or less oval leaves and funnel-shaped flowers of yellow, white, or red, according to species.

**Manfalût.** Town of Egypt. It is situated on the Nile, below Assiut, 222 m. by rly. S. of Cairo and 27 m. by river from Assiut. There are Coptic churches, and woollen factories. Date brandy is manufactured for local consumption and export. Near are the crocodile mummy pits of Maabda. Mehemet Ali here united his troops in 1820. Pop. 14,500.

**Manfred** (1231-66). King of Naples and Sicily. A natural son of the emperor, Frederick II, he was made prince of Taranto, and in 1257 with Saracen aid usurped the kingdom of Naples and Sicily. Excommunicated by Alexander IV, Manfred entered the Papal States, and from Tuscany southwards the whole Italian peninsula thrived under his rule. He fell in the battle of Benevento, Feb. 26, 1266.

Manfred is the title of a dramatic poem by Byron. The central idea of the play is the unexplained remorse of the magician Manfred. It was published in 1817, but was not staged until 1863, though it had been set to music by Schumann eleven years previously.

**Manfredonia.** Town and harbour of Italy, in the prov. of Foggia. It stands on the Bay of Manfredonia, at the base of Monte Gargano, 23 m. by rly. N.E. of Foggia. Founded in 1263 by Manfred (*q.v.*), it still retains part of its medieval walls and castle. Two m. S.W. is the fine cathedral of S. Maria di Siponto (consecrated 1117), part of the remains of ancient Sipontum (*q.v.*). Manfredonia was destroyed by the Turks in 1620, but was afterwards rebuilt. The 8th army captured it Sept. 29, 1943, during the Second Great War. Only the castle was seriously damaged. Many of the inhabitants are employed in the fisheries. The neighbouring lagoons yield large quantities of salt. Figs, almonds, and carobs are exported in considerable quantities. Pop. 15,000.

**Manfredonia, Gulf of.** Wide opening of the Adriatic Sea, on the S.E. coast of Italy. It is bounded N. by Monte Gargano, washes the shores of the provinces of Bari and Foggia, and is 32 m. wide at its mouth.

**Mangabey** (*Cercocebus*). Group of monkeys found in W. and E. Africa, and usually distinguished by the presence of white or flesh-



Mangabey. Specimen of the crested or grey-checked West African monkey

coloured eyelids. They are nearly related to the macaques (*q.v.*), but are of more slender build and have a shorter muzzle and smaller callosities on the buttocks. They are long-tailed, and the general colour of most of the species is blackish. Remarkably docile and good-tempered, these monkeys make excellent pets. See Monkey.

**Mangaia.** One of the largest of the Cook Islands, Pacific Ocean. It is a dependency of New Zealand, 116 m. from Rarotonga. The island is 30 m. in circumference and is of volcanic origin, and on the E. is a wide expanse of infertile basalt. Inland a short distance from the shore is a wall of dead coral, 100 ft. in height, which goes round the island. Within this coral rampart there are swamps and the central plateau, 650 ft. in elevation. Copra, coffee, and oranges are exported. Pop. 1,845.

**Mangalia.** Town of Rumania, in the Dobrogea (Dobruja). It stands on the shore of the Black Sea in the S.E. of Rumania, and has road connexions with Constanta, 35 m. to the N., and Bazargic. In the Middle Ages it was a flourishing port, trading with Italian ports; the harbour is inadequate for large ships. Pop. 2,776.

**Mangalore.** Town of India, in Madras, headquarters of the S. Kanara dist. It is situated on the Malabar coast on a backwater formed by the Netravati and Gurpur rivers, and has a harbour used in fair weather by small vessels. It is 407 m. S.S.E. of Bombay. The main line rly. from Madras through the Palghat gap to Calicut terminates here. There are roads across the W. Ghats to Mysore and Coorg. Two colleges are affiliated with the university of Madras. Coffee is the chief export, while nuts and pepper are also exported. Coarse cloth is manufactured.

A quarter of the people are Christians; the Jesuit mission

dates from 1880. In the 14th century it was a famous centre of commerce. Sacked in the 16th century three times by the Portuguese, it became in the 18th century the principal port for the rulers of Mysore. Captured by the British in 1768, retaken in 1784, it was held by the British in 1799. Pop. 53,877.

**Mangan, James Clarence** (1803-49). Irish poet. Born in Dublin, May 1, 1803, the son of a grocer, he received an excellent education, but owing to intemperance was never able to achieve any solid success, though some of his poetry is of a high order. He died of cholera, June 20, 1849. An incomplete edition of his poems, which include renderings from Irish, was published with a biographical note by J. Mitchel, 1859, and a centenary edition, edited by D. J. O'Donoghue, in 1903. Consult



J. C. Mangan, Irish poet  
From a drawing after death, by Sir F. Burton  
Life and Writings of Mangan, D. J. O'Donoghue, 1897.

**Manganese** (Ital. corruption of *magnesia*). Metallic element of great importance, particularly because of its use as a constituent of all steels and of many non-ferrous alloys. The mineral pyrolusite, an oxide of manganese, was probably known in ancient times and was named *magnesia* by Pliny. It was used under the name lapis manganensis in the manufacture of white glass, as it counteracts the green tints. The black Derbyshire Wad was, and still is, used to make black oil-paint. Until late in the 18th cent. it was thought to be a compound of iron, but in fact it contains only small amounts of iron. First isolated in 1774 by J. G. Gahn, the Swedish chemist, it was named manganese in 1808, after the isolation of the true magnesium by Davy. The element, chemical symbol Mn, is one of the transitional elements in the first long period of the periodic table, being associated with iron, cobalt, and nickel on the one side and chromium, vanadium, titanium, and scandium on the other. It has atomic number 25, atomic weight, 54.93; melting point, 1242° C.; boiling point, 1900° C.; density, 7.39 gm. per c.c.; electrical resistivity about  $5 \times 10^{-6}$  ohm cm. Manganese exists in

two crystal forms, alpha-manganese and beta-manganese, both of which are complex in nature and probably contain manganese atoms in different states. The element has two free-valency electrons, but probably forms six different oxides, among them being  $\text{MnO}$ ,  $\text{Mn}_2\text{O}_3$ ,  $\text{Mn}_2\text{O}_4$ , and  $\text{MnO}_2$ .

The chief ores of manganese are pyrolusite,  $\text{MnO}_2$ , containing 63 p.c. Mn and 37 p.c.  $\text{O}_2$ ; braunite,  $\text{Mn}_2\text{O}_3$ ; hausmannite,  $\text{Mn}_3\text{O}_4$ ; manganite,  $\text{Mn}_2\text{O}_3 \cdot \text{H}_2\text{O}$ ; psylomelane, similar to pyrolusite; rhodonite or manganese spar,  $\text{MnCO}_3$ ; wad or bog manganese in which it is associated with iron, cobalt, or copper and water; and manganese blende,  $\text{MnS}$ . The minerals are widely dispersed and Blumenbach at the beginning of the 19th cent. said that "most of the black, dendritic marks in various stones depend upon the presence of this substance." Various ores are used directly in their native conditions, in the preparation of glass, the colouring of pottery, tiles, and bricks, for bleaching, where their facility for yielding nascent oxygen is of value. High grade pyrolusites are used for the manufacture of dry batteries and also for the removal of sulphur from gases produced from coal. The chief sources of such high grade ores are in the U.S.S.R. and parts of the British Commonwealth—India, the Gold Coast, and S. Africa. The U.S.A. imports ores from Brazil, Cuba, and the Gold Coast.

#### Sedimentary Deposits

In sedimentary deposits manganese has been precipitated in beds or nodules invariably accompanied by iron compounds on lake-bottoms or on sea-floors—this process is taking place at the present time in the deep sea. The elevation of these deposits above water-level may give commercial deposits, especially if concentration by natural chemical or mechanical processes takes place. The sedimentary concentration of manganese in lakes may also be accomplished by the action of bacteria or algae, giving rise to bog-manganese deposits in e.g. Sweden, Spain, and the U.S.A. The extensive deposits of nikopol in the Ukraine and chiaturi in the Caucasus are examples of sedimentary ore-bodies formed by bacterial agencies which have been elevated and reconcentrated by natural processes.

The metamorphism of sedimentary or residual deposits may result in workable concentrations

of hausmannite, braunite, and franklinite, as at Franklin Furnace, U.S.A., and in Sweden.

#### Processes and Uses

The metal can be obtained by reduction of the dioxide by carbon in the electric arc furnace, when it contains varying amounts of carbon as an impurity. An alternative is to use the thermit process, reducing  $\text{Mn}_2\text{O}_4$  with aluminium, in much the same way as chromium can be produced. Metal of very high purity can be obtained by electrolysis of a solution of manganous chloride, using a mercury cathode. The amalgam formed with the mercury is collected and the mercury distilled off under vacuum at  $250^\circ \text{C}$ . The crude metal produced in the first case has a coarse, silvery, crystalline fracture tinged with yellow or red, but the electro-deposited metal is silvery-white. The pure metal is extremely hard and brittle: glass can be scratched with it. Although it can be obtained of a purity greater than 99.98 p.c., so far it has not been of use as a metal by itself, but it is used in many alloys. Alloys with copper and nickel are used for electrical resistances, while the high-tensile brasses or manganese bronzes (*q.v.*) are widely used in both cast and wrought forms, particularly where resistance to sea water corrosion is important. Manganese is used in aluminium alloys to improve their mechanical properties and in magnesium alloys to increase resistance to corrosion.

But the principal use of manganese is in the iron and steel industry. The pure metal is rarely added to ferrous materials; it is added either as ferro-manganese or as spiegel-eisen. Ferro-manganese is the crude pig metal, manufactured either in a blast or an electric arc furnace by a process similar to that used for the pure metal. It contains 65–85 p.c. of manganese. Spiegel is really a manganiferous cast iron; it contains 5–25 p.c. of manganese. Both these alloys contain 5–7 p.c. carbon; a special variety of spiegel, silico-spiegel, contains as much as 10 p.c. of silicon. The manganese alloy is added to the steel just before pouring. It acts primarily as a deoxidiser, removing any ferrous oxide, which would otherwise make the steel unworkable. It also converts the iron sulphide, which would form films round the individual steel grains, into manganese sulphide, which is globular and comparatively harmless. The oxidised man-

ganese forms a readily fusible slag, which can be removed from the top, but the excess alloys with the iron and improves the properties of the steel. Hence most carbon steels contain 0.5–0.7 p.c. of manganese, while as much as 1.5 p.c. is added to give the perlitic manganese steels, which are stronger and tougher than the plain carbon steels. The austenitic manganese steels, containing 12–15 p.c. of manganese, are very subject to work-hardening. They are therefore used for such machines as ball mills, jaw-crushers, and rly. points, where the surfaces are subject to abrasion and so become work-hardened continually during use. Manganese is also added to cast irons.

Various manganese salts are used in the chemical and dye industries, perhaps the best known being the red-purple potassium permanganate, used as a disinfectant. The element occurs in many mineral waters and plants, chiefly cereals and certain vegetables. See Cast Iron; Manganese Bronze; Steel; Metallurgy.

**Manganese Bronze.** Customary name for what is really a high tensile brass. The composition is similar to the normal 60/40 brass, but contains various alloying additions which vastly improve its mechanical properties. The alloying elements replace the zinc, having effects in accordance with Guillet's Equivalents (*q.v.*). Typical alloys might contain 2–4 p.c. of aluminium and manganese, and they would have a tensile strength of about 40 tons per sq. in. with an elongation of 15–25 p.c. They make excellent castings and forgings, and are used for marine propellers and rudders, where their resistance to sea water corrosion is of benefit, for gun mountings, car fittings, etc. See Brass; Bronze; Manganese.

**Manganin.** An alloy containing approx. 83 p.c. copper, 13 p.c. manganese, and 4 p.c. nickel. It is used in wire form for standard electrical resistances as it possesses a remarkably low temp. coefficient of resistance.

**Manganite.** An ore mineral of manganese, one of the hydrated manganese oxides ( $\text{Mn}_2\text{O}_3 \cdot \text{H}_2\text{O}$ ), occurring as bundles of black prismatic crystals or in stalactite form. It is found in veins associated with other manganese minerals and may change to pyrolusite (*q.v.*).

**Mangbetu** or **MONBUTU.** Negroid people, mostly in the upper Welle and lower Welle districts of Belgian Congo. Their Caucasoid

features—light-brown skin, occasionally greyish hair, curved nose—suggest racial contact with the Fula; their culture connects with the Bahima. The widespread physical type observed by Schweinfurth has dwindled, but the language is spoken by allied tribes who share with them the Zandé culture—cannibalism, throwing axes, ironworking—displayed by their neighbours, the Niam-Niam.

**Mange.** Name given to parasitic skin diseases of animals. There are two types of parasite giving rise to two different infections: sarcoptidae (scabies in man) and demodectidae (follicular).

Sarcoptic mange is caused by various members of the sarcoptic family affecting animals in different ways. These parasites affect man and all domestic animals including birds. They give rise to constant and often acute irritation of the skin, loss of hair, soreness and crustiness of the skin, and often loss of general condition. Sarcoptic mange is not infrequently transmitted from dog to man. Noticeable symptoms are seen within a month of infection. Psoroptic mange in sheep (sheep scab) and sarcoptic mange in horses are diseases which on discovery must be reported to the ministry of Agriculture and Fisheries. Treatment will take from three to eight weeks. Sulphur ointment and various watery and oily sulphur preparations are commonly used. Benzole benzoate and preparations of this product may give rise to toxic symptoms, especially in the cat.

Follicular mange is found on the skin of man, dog, ox, pig, and goat; rarely on that of the horse and other animals. The parasite is found in the hair follicles and sebaceous glands. It causes little irritation, but loss of hair is complete over the affected patches, which may cover the whole body

surface. In late stages the condition is seriously complicated by addition of a staphylococcal infection. Cure may take from three weeks to several months according to the resistance of the parasite. Some cases prove incurable. Treatment has usually been confined to sulphur ointment or some oily preparation containing sulphur. More recently crystal violet and brilliant green have been used with varying success. Penicillin and thiazamide will combat the secondary invasion of the staphylococcus.

**Mangin, CHARLES MARIE EMANUEL** (1866–1925). A French soldier. Born at Sarrebourg, July 6, 1866, he passed into St. Cyr in 1886. He was on active service in the Sudan, 1889–99, and took part in Marchand's expedition to Fashoda. He was in Tongking 1901–04. In 1910 he was a colonel on the W. African staff, and in 1913 was appointed brigadier-general, commanding the 8th infantry brigade.

In the first battle of the Marne, 1914, Mangin led the 5th infantry division. In 1916 he was fighting at Verdun, was made temporary general of division, then full general. During the Verdun operations he recaptured Douaumont and Vaux. Criticised for his conduct in the offensive of April, 1917, he was exonerated after a searching inquiry. Given the 10th army in 1918, he conducted on June 11 the counter-attack which arrested the German offensive on Compiègne; and from July 18 to Aug. 2 took a leading part in the counter-offensive which forced the Germans to retire on the Marne and the Aisne. On Aug. 20 he drove the enemy to the Oise and the Ailette. He was appointed grand cross of the legion of honour, and died May 12, 1925.

**Mango** (*Mangifera indica*). Evergreen tree of the family Anacardiaceae. A native of the East Indies, it attains a height of about 60 ft., and its leaves are oblong lance-shaped. The yellowish flowers streaked with orange form dense clusters, and are succeeded by bunches of kidney-shaped fruits, 3–6 ins. in length and nearly half as broad, with tough green skin and yellow pulp, enclosing a fibrous-coated seed. The fruit of the best cultivated kinds is very delicate. It is also used in the manufacture of chutney and preserves.

**Mangold (or Mangel) Wurzel** (Ger., beet-root). Cultivated variety of the sea beet (*Beta maritima*), principally used for feeding stock. Belonging to a different family (Chenopodiaceae) from turnip and swede, which are Cruciferae, mangolds require somewhat different cultural treatment, especially as regards manures. There are three leading types, the long red, the globe-shaped yellow, and the tankard, which is of intermediate shape. The crop takes longer to mature than turnip or swede, and has to be sown before them. Also, being deeper-rooted, it can thrive with less rain, and is more tolerant of heat. It is not eaten on the ground, nor will it stand the winter if left in the soil, and it is stored for winter and spring feeding.

The "seeds" are really fruits, from each of which two or three shoots may arise. Uniform drilling is secured by previously milling these fruits so as to set free the true seeds. Sowing takes place in April or May, at the rate of 6 to 8 lb. of seed per acre.



Mangold Wurzel. Leaves and root of the best used for feeding stock

The best crops are raised on deep clay loams, but good results can be obtained on a great range of soils. Heavy dressings of manure are required, as the crop is a gross feeder. Dung does not supply the necessary nitrogen, and has to be supplemented by some form of nitrogenous manure. Potassic manures are essential, and salt has a good effect, as might be expected when the origin of the mangold from a shore plant is remembered. The roots are pulled by hand before the frosts begin, usually in late Oct., the tops being either twisted or cut off. Pitting or clamping in the field is the usual method of storage. On good soils an average of from 40 to 60 tons per acre may be expected.

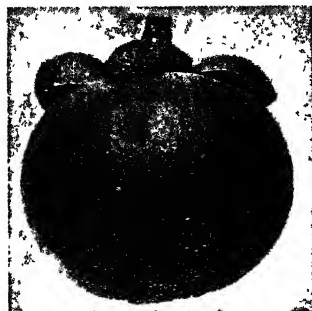
**Mangonel.** Medieval siege engine, also known as the trebuchet. Presumably a modification of cer-



Mango. Specimen of the East Indian tree in fruit

tain Roman engines, it was used to throw heavy stones or incendiary missiles over walls. It consisted of a heavy base carrying a vertical frame at the front end, fitted with a crossbar at the top. A beam was pivoted lower down the frame and carried a cup at the rear end, while it could be loaded either with a heavy counterweight or twisted cords in such a manner that there was a tendency to pull the beam into a vertical position. The end of the beam was held down against this action by a catch, and the missile placed in the cup. When the catch was released the beam sprang up, and when it struck the crossbar projected the missile upward and forward for a considerable distance. Engines embodying exactly this principle and of the same general construction were used in the earlier period of the First Great War for throwing grenades and heavier bombs, the motion being obtained by strong spiral springs in place of cords.

**Mangosteen** (*Garcinia mangostana*). Small evergreen tree of the family Guttiferae, native of



Mangosteen. Fruit of this East Indian tree

the Moluccas. It has elliptic, leathery leaves, and rose-like red flowers with waxy petals, succeeded by fruits the size of an orange with leathery, dark-purple rind, enclosing a white pulp which Burbridge describes as possessing "a flavour which is like the finest nectarine, but with a dash of strawberry and pineapple added." An infusion of the dried rind makes an astringent drink used in dysentery.

**Mangotsfield.** Urban district of Gloucestershire, England. It includes Downend, Mangotsfield, Soundwell, and Staple Hill. About 5 m. N.E. of Bristol, it has a rly. junction for the Midlands and the S. coast. The district was formerly a mining one, but now footwear, clothing, and chocolate provide industries. Gas, electricity, and water are supplied from Bristol.

The dist. votes in South Glos. At Downend W. G. Grace was born. Pop. approx. 16,000.

**Mangrove** (*Rhizophora*). Genus of trees of the family Rhizophoraceae. Natives of tropical coast swamps, they have thick, leathery leaves of elliptic form, and large flowers. The trunk sends out roots above the water-line, as well as below it, and these extend laterally for some distance before arching down into the mud. The branches also send down prop-like roots similar to those of the banyan. The fruits are inversely pear-shaped, and the seed germinates while the fruit is still hanging on the tree. The seedlings grow in this position until they have stems several feet in length, with roots at the lower end and a leaf bud at top, when they drop into the mud and continue their growth. The fruits of the common mangrove are edible, and their fermented juice provides a kind of wine. The bark is used for tanning and dyeing; also as a fever medicine.

**Mangrove**, WHITE (*Avicennia nitida*), or **COURIDA**. Small evergreen tree of the family Verbenaceae, native of S. America. It has opposite, narrow-oblong leaves, and inconspicuous flowers in terminal clusters. The trees grow in mudbanks along the coasts, their roots forming a network which holds the mud. Vertical branches arise from the roots to assist in the work, which has had the effect of converting thousands of square miles of muddy coast into firm land. For the story of the Courida's reclamation work, *consult* In the Guiana Forest, J. Rodway, 1894.

**Manhattan.** Island at the mouth of the Hudson river, U.S.A. It is  $12\frac{1}{2}$  m. long, with an extreme breadth of  $2\frac{1}{2}$  m., and forms the smallest of five boroughs which comprise New York city. Each bor. is also a co., Manhattan constituting New York co. It lies E. of the Hudson, and is bounded N. by the Harlem river and ship canal; 230th St.; and Marble Hill; E. and S.E. by Harlem and East rivers (in reality estuaries); and S. by Upper New York Bay. Battery Point is the S. extremity. Several

fine bridges give access to other parts of the city.

The most populous borough after Brooklyn, Manhattan includes the most noted features of the city, e.g. the famous skyline of the world's tallest buildings, Wall St. (financial centre), piers and docks of the largest ocean-going ships, New York civic centre, federal and state buildings, museums and art galleries, Fifth Avenue shops, Broadway (*q.v.*), with its theatres and night clubs, and the smartest and most expensive residential areas in the upper E. side streets, and along the upper East river. Pop. 1,899,924. *See* New York.

**Mani**, MANES, or MANICHAËUS (215-276). Persian religious reformer, whose real name is said to have been Cubricus. An ascetic from his youth, he formulated a system to supplant Zoroastrianism (*q.v.*), proclaimed himself a messenger of the true God, surrounded himself with apostles, found some favour at court, and went on missionary journeys. Forced into exile by the priests, he won the support of Hormisdas I, but in the reign of Bahram I, when the priestly party again came into power, he was seized and crucified, his body being flayed, stuffed with hay, and

nailed to the city gate that was later named after him. Of his numerous writings only fragments remain. *See* Manichaeism; *consult* Mani, G. Flügel, 1862; Mani, K. Kessler, 1889.

**Mania.** Disease of the mind characterised mainly by loss of control. The condition is often associated with periods of depression, and many alienists now prefer to speak of manic-depressive insanity rather than to regard mania by itself as a distinct form.

Maniacal attacks may also occur in other forms of insanity, e.g. epileptic insanity and general paralysis of the insane. The cause of manic-depressive insanity is not known, but hereditary influences play a part.

Acute and chronic forms of mania are recognized. Acute mania may come on gradually, or may begin suddenly after a period of restlessness or depression. Sleeplessness is often an early symptom. The



Mangrove. Trunk and roots of *Rhizophora mangle*

patient's ideas are disordered, his attention distracted, his judgement impaired, and his speech incoherent. He may display great loquacity, or be constantly shouting or singing, and may be obscene in his language. Delusions are frequent and often take the form of exalted beliefs. He may hear voices or sounds.

A maniac may be happy and cheerful at one moment, and at the next may be irritable and even violent. He may endeavour to destroy his clothing or articles of furniture, or attack those around him. He may be constantly in motion, waving his arms about and yelling. He is often filthy in his habits and indecent in his behaviour. Sleeplessness is common, and the patient may refuse all food. The general nutrition becomes impaired and muscular wasting occurs. Complete recovery may occur, but there is always the possibility of further attacks, and the condition may eventually become chronic. Ultimately the patient may become demented, physical exhaustion becomes marked, and the patient may die either from exhaustion or from an intercurrent disease such as pneumonia. Treatment in suitable cases is often an endeavour to restore by local electrical shock the function of the brain cells. Drugs are sometimes used to produce a similar effect. See Mental Disorder.

**Manicaland.** District partly in Rhodesia, and partly in Mozambique. The Manicaland goldfield has long been worked. The richest reefs are in the Penhalonga mountains; water supply is abundant, and some ore is obtained by quarrying. The dist. is 150 m. S.E. of Salisbury and 220 m. N.W. of Beira. See Africa; Umtali.

**Manichaeism.** Religious system of W. Asia, founded by Mani (q.v.) in the 3rd century A.D. Mystical and dualistic, and aiming at an explanation of the problem of human existence, it consisted of a fusion of Parsee metaphysics, Buddhistic morals, Babylonian mythology, and certain elements of Gnosticism and Christianity. The dualism was of the regions of light and darkness, mingled in the visible world. Salvation was regarded as attainable by knowledge of the true nature of the universe and the final separation of spirit (light) from matter (darkness). Manichaeism ruled out the O.T. Christ was regarded as a messenger of the light, but the apostles had misrepresented Him, and Mani was the promised Paraclete.

The followers of Manichaeism were divided into the Elect, bound, after the example of the founder, to an ascetic rule that forbade defilement by mouth, hand, and bosom; and the Hearers, from whom the mysteries were concealed. The Elect went direct to Paradise, the Hearers to a kind of Purgatory, the non-Manichaeans to Satan. There was an ecclesiastical system, and the simple worship included prayer, singing, fasting, and the observation of baptism and communion. One great festival, the Bema (pulpit), was observed on the anniversary of the death of the founder. Faustus, an African bishop (fl. 400) and the most eloquent of Manichaean teachers, placed morality before doctrine as a test of the true believer. The system spread to India, Turkistan, Syria, Palestine, and Egypt. Forms of it appeared among the Paulicians, Bogomiles, Cathari, and Albigenses.

**Manicure** (Lat. *manus*, hand; *cura*, care). Term applied to the care of the hands and finger nails. It is now an essential part of the toilet, and the services of a manicurist are provided for both men and women by most coiffeurs. Manicure can be carried out personally without elaborate apparatus. The hands are first soaked in a lather of good soap to which a little eau de Cologne or toilet vinegar has been added, together with lemon juice. They are thoroughly dried, and after cold cream has been rubbed into the base of the nails, the cuticle should be pushed back with an orange stick; metal must not be used. The nails should be trimmed with curved-bladed scissors, care being taken not to press the points too deeply below the free edge, otherwise the nail will develop bruises and white spots. When filing the nails to shape, an emery board should be used in preference to a metal file; the latter may bruise or scratch the nail. The nails are rubbed with a suitable powder and then polished with a chamois-leather buffer.

Application of varnish preserves the polish. This varnish may be colourless, but modern Western fashion has revived among women the ancient Egyptian custom of colouring the finger nails with various shades of red or pink varnish. In Eastern countries henna is used for tinting. In China long nails among men were once an indispensable sign of high rank, but their inconvenience led to disuse, though sometimes one nail is allowed to grow, protected

by a sheath. In Spain it is customary for both sexes in the leisured classes to allow the nail of the little finger of the right hand to grow long as a sign of freedom from manual labour. In most countries today women at least have fairly long pointed nails.

**Manifest.** Term used for a document that contains a description of the articles contained in the cargo of a ship, and particulars about their destination. Every vessel carrying goods must have a manifest, to be delivered to the Custom House officers at the port of destination. It is one of the ship's papers, which in time of war are usually inspected when a vessel is boarded either to search for contraband or for other purposes.

**Manifold.** Machine for producing a number of facsimile copies of a plan or document from a single original. Sometimes it is called a duplicating machine or mimeograph. The earliest type of manifold was the hektograph, introduced about the middle of the 19th century. Its operation is based on the principle of absorption; the original writing or drawing is done on a sheet of hard bond paper with a water-soluble ink, and the sheet placed in contact with a moist surface of gelatine composition; the writing is then absorbed from the paper and impressed in reverse on the gelatine surface. By placing a sheet of dry paper on the moist surface, the impression is transferred to the paper. This type of manifold is still used for the reproduction of large drawings and plans, up to 100 copies being obtained from a single impression.

For the reproduction of large numbers of copies stencil methods are now chiefly used. In the early stencil manifolds, the stencil was made on a sheet of wax-covered paper, which was written upon either with a stylus or with a typewriter from which the ribbon had been removed. Waxed paper has now been replaced by sheets of tough, flexible tissue. The stencil is fastened over a hollow, revolving cylinder partially covered by an inked pad. Each revolution of the cylinder brings the stencil in contact with the paper, and the ink, passing through the letters or outline of the drawing, makes the impression. In 1902 the automatic, electrically-driven rotary duplicator was patented by David Gestetner; this can reproduce 5,000 copies an hour.

Photocopying machines are used for the rapid reproduction of



titles, deeds, contracts, etc. The machine combines a camera with developing and fixing tanks. A roll of sensitised paper photographs the original and then automatically passes through the fixing and developing baths. As the photographs are made through a reversing prism, the lettering or drawing appears exactly as in the original. It is also possible to print two sides of a page simultaneously.

**Manifold.** River of Staffordshire, England. A tributary of the Dove, which it joins 3 m. N.W. of Ashbourne, it is noted for its sinks or swallets. Near Thors Cave it disappears and comes to the surface again in the grounds of Ilam Hall, flowing underground for a distance of 4 m.

**Manihot.** Genus of American shrubs and herbaceous plants of the family Euphorbiaceae. See Cassava; Tapioca.

**Manila.** City of the Philippine Islands. The capital and chief port of the group, it stands on the W. coast of Luzon Island at the entrance of the Pasig river into Manila Bay. The Pasig divides Manila into two portions, the old walled city lying to the S. and the modern suburbs to the N.

The former, reduced to rubble in 1945 (*v.i.*), was enclosed by a 16th century wall and contained the most important buildings. These included the 16th century cathedral, the archbishop's palace, the university, government buildings, convents, hospitals, colleges and schools, and the observatory.

The chief industries included cigars, cigarettes, tobacco, distilled and malt liquors, Manila hemp products, and textiles. There were also foundries, machine shops, boot and shoe and furniture factories, flour-mills, and ship- and boat-building yards. Although its industry was much damaged during the Japanese occupation, Manila exports hemp, copra, sugar, and tobacco, and imports cotton goods, rice, machinery, chemicals, and food stuffs. From the time of its acquisition by the U.S.A. to the Second Great War the city underwent a remarkable transformation. The harbour was greatly improved, electric lighting and tramway systems were provided, telephone services installed, and the drainage entirely remodelled. The water supply was

also improved by the adoption of gravity works, the water being carried about 24 m. to a large reservoir some 200 ft. above sea level.

Manila was founded by Spaniards in 1571, and about 20 years later was strongly fortified. It suffered at the hands of the Dutch at the beginning of the 17th century, and from 1762 to 1764 was in British occupation. The Filipinos began to manifest a feeling of discontent with Spanish rule in 1890, and from 1896 until the American declaration of war against Spain much skirmishing took place. The sinking of the Spanish fleet in Manila Bay was the signal for further action by the insurgents under the leadership of Aguinaldo, and on Aug. 13 the city was forced to capitulate to an American army. Friction then ensued between the Americans and the Filipinos, who attacked the city on Feb. 4, 1899, but were defeated.

During the Second Great War the U.S. authorities declared Manila an open city, Dec. 25, 1941, but Japanese bombers attacked it next day, destroying many buildings. MacArthur evacuated Manila and the Cavite naval base, the Japanese entering on Jan. 2, 1942. U.S. troops advancing from three sides entered Manila, Feb. 4, 1945. The part of the city on the N. bank of the Pasig was under U.S. control by the 6th, but the Japanese retired to Intramuros, the old Spanish walled city on the S. bank, blowing up the bridges behind them, and held out there until Feb. 24. Intramuros was reduced to rubble.

The town suffers from earthquakes. The first recorded shock

was in 1599, and that of 1862 was the most calamitous: it threw down the cathedral and nearly 600 buildings, many people being buried in the debris. The senate, treasury, and mint buildings were nearly destroyed by fire in 1920, and in April, 1921, a fire destroyed 3,000 houses in the native quarter. Pop. 684,800.

**Manila, UNIVERSITY OF.** Educational centre in the Philippines. Inaugurated in 1585, when Philip II of Spain gave authority for its inception, the university of Manila began when the college of S. Joseph for the aristocracy was opened by the Jesuits in 1601, and, ten years later, the college of S. Thomas was established by the Dominicans for poor Spaniards and natives. After 1619 degrees were granted by the colleges, which became the university in 1644, when a school of law was added. In 1730 the university was closed. The existing institution arose in 1857, and in 1871 medical and pharmaceutical schools were opened. Modelled on American lines, the university has faculties of canon and civil law, engineering, medicine, education, pharmacy, philosophy and arts, and theology. Although closed during the Japanese occupation, 1942-45, it was reopened soon after liberation.

**Manila Bay.** Large inlet of the China Sea in S.W. Luzon, Philippine Islands. Triangular in shape, it communicates with the sea by a passage 11 m. wide; N. of the passage the shore of the peninsula of Bataán is high and forested; the Cavite shore on the S.E. is low, while most of the Manila shore on the N.E. is occupied by the marshy

delta of the Pam-panga. The bay is deep, with good anchorages at Cavite and Manila, and is the finest harbour in the Far East. For accounts of the fighting in the Second Great War see under Bataán Peninsula; Manila; Luzon.

**Manila Bay, BATTLE OF.** Naval engagement in the Spanish-American War, May 1, 1898. War had been declared five days when Commodore Dewey, then at

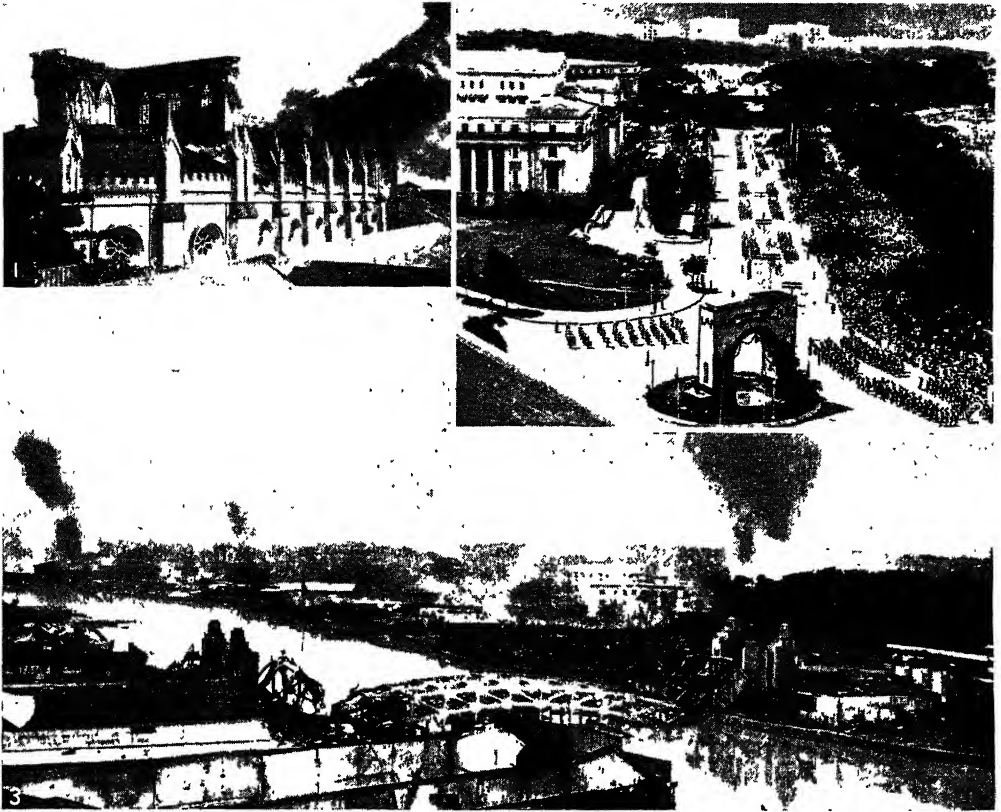


Manila arms



Manila, Philippine Islands. Plan of the city and its suburbs, showing the harbour and principal quays





Manila, Philippine Islands. 1. Santo Domingo church, a famous shrine, burning after the Japanese raid of Dec. 27, 1941. 2. Japanese troops parading past the Legislative Building, Oct. 14, 1943, to celebrate their gift of "independence" to the Filipinos. 3. Fires started by the retreating Japanese as U.S. troops advanced to liberate the capital, Feb., 1945

Photos, U.S. Official

Hong Kong, was ordered to attack the Spaniards in the Philippine Islands. Arriving on the night of April 30, he entered Manila Bay, attacked early the next morning, and destroyed the fleet of ten ill-equipped and almost immobile vessels under Admiral Montojo. See Spanish-American War.

**Manila Hemp** OR ABACA. Fibre obtained from *Musa textilis*, a plant of the banana family. The native name of the plant is Abaca. It is a native of the Philippine Islands, and is now grown in many tropical countries. The outer fibre is very strong and makes excellent ropes. The old ropes, unravelled and picked, are made into Manila paper. The fine inner fibres are worked into dress fabrics by the natives, and in Europe are manufactured into veils, handkerchiefs, and articles of clothing. These fine fabrics are known as grasscloth, though the plant is not a grass. As a binding medium for builders' plaster, Manila hemp is stronger than animal hair. See Hemp.

**Manila Tamarind** (*Pithecolobium dulce*). Large tree of the family Leguminosae. It is a native of Mexico, but is extensively grown for its fruit in the Philippines and India. The leaves are twice divided into small leaflets, and the clustered whitish flowers are tubular. Long cylindrical pods, curled at the top, contain glossy seeds embedded in sweet edible pulp.



Manila Tamarind. Flower sprays and foliage. Inset, left, flower; right, seed pod

**Manilius, GAIUS** (1st cent. B.C.). Roman tribune of the people. A strong supporter of Pompey, in 66 B.C. he brought forward a proposal that Pompey, who had already cleared the Mediterranean of pirates, should be entrusted with the supreme command in the war against Mithradates, with unlimited powers. The proposal was supported by Cicero.

Another Manilius whose praenomen is unknown, was the author of a Latin poem in five books, written in hexameters, entitled *Astronomica*. Nothing is known except that he lived during the reign of Augustus, as is evident from certain allusions. The poem, which deals with the influence of the stars on the life of man, is of an astrological character.

**Manin, DANIELE** (1804-57). Italian patriot. Born in Venice, May 13, 1804, of Jewish origin, he became a lawyer and associated with advanced revolutionary spirits. On the outbreak of the revolution of 1848 he was rescued by

the people from prison, and elected president of the Venetian republic. Upon the Austrians advancing against Venice in 1849, he inspired the populace to defend the city, and only after four months' siege did Venice fall on Aug. 24. Manin was one of 40 citizens excluded from the amnesty, and he retired to exile in Paris, where, crushed by poverty and domestic sorrow, he died Sept. 22, 1857.

**Man in the Iron Mask.** This celebrated mystery of 17th century France is discussed under Iron Mask.

**Manioc.** French name for *Manihot utilisissima*, cassava or tapioca (q.v.).

**Maniple** (Lat. *manipulus*, handful). In the Roman army, a subdivision of the legion. The 3,000 heavily armed legionaries were divided into 30 maniples, 20 of which consisted of 120, the remaining 10 of 60 men. The unit took its name from the handful or bundle of hay or straw twisted round a pole, which was adopted as its standard. See Legion.

**Maniple** (Lat. *manipulus*). Ecclesiastical vestment of the Western Church. Originally it was a narrow strip of linen shaped like a stole, and carried in the left hand of the celebrant. Now its ends are fastened together so that it can be worn securely on the left wrist. By degrees it was made of silk or velvet, and embellished with a fringe, needlework, and gold embroidery, and even



Maniple as worn in celebrations of the Mass

golden bells. It is represented in the Bayeux tapestry and on figures in the basilica of S. Ambrose at Milan. Abandoned by the English Church at the Reformation, its use has been revived. It is said to symbolise penance and sorrow. See Stole.

**Manipur.** A state of the Union of India. It comprises a narrow valley along the Lushai Hills, on the Burmese border. At the time of the Indian Mutiny, its raja, Chandra Kirti Singh, rendered service to the British. Ultimately a British resident was stationed at the capital, Manipur or Imphal, responsible to the chief commis-

sioner of Assam. In 1891 the raja was deposed by the hill tribes under the Senaputty, and the commissioner, J. W. Quinton—who with a small force attempted to arrest the Senaputty—together with the resident, F. St. Clair Grimwood, was killed. After the massacre Mrs. Grimwood made a plucky escape under fire. A punitive expedition was sent against the Manipuris, the Senaputty was hanged, other leaders of the mutiny were transported for life, and Chura Chund was declared raja, a British officer being appointed to administer the state until his majority. Area, 8,638 sq. m. Pop. 512,069, more than a third belonging to animistic hill tribes.

In March, 1944, Japanese forces crossed the Burma-India frontier and invaded Manipur, driving towards the Imphal plain. Heavy fighting took place towards the end of the month on the Manipur-Chin Hills front, British and Indian troops forming "box" positions and receiving supplies by air. Early in April a Japanese column cut the Imphal-Kohima road, isolating Kohima and also threatening the supply lines of Gen. Stilwell's force making the Ledo road. Kohima was relieved on April 22, and the Japanese advance was halted, though the enemy was not cleared from Kohima until May 14. By Aug. 25 the last Japanese troops had left the state. See Burma Campaign.

**Manis** (Lat. *manes*, ghost). Generic name of the scaled anteaters or pangolins. They are all natives of Asia and Africa, and are so called from their nocturnal habits. See Anteater; Pangolin.

**Manishtusu.** King of Akkad, N. Babylonia. Successor, either before or after Rimush, and perhaps son of Sargon I, he appears on statues as a bearded Semite, and on stelae as a vigorous conqueror. His famous obelisk found at Susa, 1897-98, is a diorite block 4½ ft. high, bearing 7,600 signs in Semitic cuneiform. See Naramsin.

**Manissa** OR **MANISA.** Town of Asiatic Turkey, the ancient Magnesia ad Sipylum. It lies about 20 m. N.E. of Izmir, with which it is connected by rly., and is the junction of a branch line N. to Panderma on the Sea of Marmara. An important centre of trade, it makes cotton goods. It was the seat of the Byzantine imperial government in the 13th cent., and Murad II two centuries later made it his place of retreat after abdication. Manissa gives its name to a vilayet with pop. 472,442.

**Manitch** OR **MANYCH.** Name of a depression or river-bed in the Azov-Black Sea area and the Kalmuck A.S.S.R., European Russia. It extends 425 m. from the Don to Lake Keke-Uzun 50 m. from the Caspian Sea. In spring, when the snow melts, the bed is filled with water, forming two rivers, flowing W. and E., the first into the Don. This depression, regarded by some as the boundary between Europe and Asia, is below sea level, and once connected the Black Sea with the Caspian.

**Manitoba.** Lake of Canada. In the prov. of Manitoba, it is 60 m. W. of Lake Winnipeg, with which it is connected by the Little Saskatchewan river, also called the Dauphin, and by Lake St. Martin. It receives through the Waterhen river the waters of Lake Winnipegosis. It abounds in fish, has a length of 122 m., a breadth of 25 m., an area of 1,820 sq. m., and is at an alt. of 810 ft. The lake was discovered by a French explorer, 1739.

**Manitoba.** Province of the dominion of Canada. Its area is 246,512 sq. m., of which 26,789 are



Manitoba arms

water. It lies between Ontario and Saskatchewan, with the U.S.A. on the S., while N. it reaches to the shores of Hudson Bay. It is watered by many rivers, one group falling into the three great lakes in the province—Winnipeg, Winnipegosis, and Manitoba. The chief rivers are the Red, which comes from the U.S.A., the Assiniboine from the W., and the Nelson, which carries the waters of Lake Winnipeg to the bay. The most easterly of the three prairie provinces, Manitoba is one great plain. Winnipeg is the capital and the largest city.

The affairs of the prov. are controlled by a legislative assembly of one house; its 58 members are chosen for a term not exceeding five years, women being voters and also eligible for membership. There is a cabinet responsible to the legislature, while a lieutenant-governor represents the crown. Provincial affairs include education and agriculture; other departments are finance, attorney-general's, health and welfare, labour, mines, municipal affairs, and public works. The province sends 17 members to the house of commons and six to the senate of the dominion parliament at Ottawa. For the town and rural districts

there is a system of local government with an elected council.

Although grain growing is of major importance, farmers also raise cattle, pigs, and sheep. Horses, once the main source of power, are being replaced by tractors and trucks. Much revenue is derived from dairying, poultry, and apiaries. Sugar beet, field peas, and sunflowers are successfully cultivated. The lakes and rivers provide excellent fishing. Copper, zinc, gold, and silver are mined. The province has 4,837 m. of rly. line, and the two transcontinental lines cross it, meeting at Winnipeg.

Manitoba developed from the Red River settlement. In the 18th century it was a region inhabited only by fur traders, but in the 19th regular colonisation began, Fort Rouge, where Winnipeg now stands, being the centre. The land was administered by the Hudson Bay Company until 1869, when it was bought by the new dominion. In 1870 the province of Manitoba was created, in 1881 it was enlarged, and in 1912 part of the North-West Territories was added. The pop., estimated in 1941 at 729,744, is mixed, but 84.8 p.c. were born in Canada or the U.K. See Canada; Red River Settlement. Consult Manitoba, its Development and Opportunities, F. H. Kitto, 1931.

Douglas L. Campbell

**Manitoba**, UNIVERSITY OF. Canadian university at Winnipeg. Founded in 1877 for the province of Manitoba, it was at first only an examining body. In 1900 it became a teaching body. Affiliated to it are six colleges: S. Boniface, S. John's, Manitoba, and Wesley, belonging respectively to the R.C., Anglican, Presbyterian, and Wesleyan denominations, the law

school at Winnipeg, and the agricultural college at St. Vital. The university buildings are in Winnipeg. The university has a library, laboratories, etc. In 1898 the government of the province made it a grant of 150,000 acres of land. Some 2,700 students take courses.

**Manitou**. In N. American Indian religion, the god or protecting spirit of a tribe or individual, always conceived as a totem or animal spirit. The term is also used of supernatural beings with a wider sway, such as Gitche Manitou, the Great Spirit, described in Longfellow's *Hiawatha*.

**Manitoulin**. Group of islands in Lake Huron. Except for Drummond, which belongs to the U.S.A., they are in the prov. of Ontario. The chief are Great Manitoulin, 90 m. long, Drummond, 24 m. long, and Little Manitoulin, or Cockburn, 7 m. long. They are visited in summer for fishing and pleasure. The inhabitants are largely Indians.

**Manitowoc**. City of Wisconsin, U.S.A., the co. seat of Manitowoc co. A port of entry on Lake Michigan at the mouth of the Manitowoc r., 75 m. N. of Milwaukee, it is

served by the Chicago and North-Western and other rlys., and by lake steamers. Manitowoc has a good harbour and docks, and an important trade in coal and limestone. Fishing, shipbuilding, canning, and other industries are carried on. A trading post was established here in 1795. Settled about 1835, it became a city in 1870. Pop. 24,404.

**Maniu**, JULIUS (b. 1873). Rumanian statesman. He was born Jan. 8, 1873, near Alba Julia, Transylvania. He was from 1906 to 1910 a member of the Hungarian parliament, and fought for autonomous rights of the Rumanian minority. After the First Great War he organized, Dec. 1, 1918, the incorporation of Transylvania with Rumania, was elected chairman of its National party in 1919, and, in 1926, merged it with the Rumanian Peasants' party in the National Zaranist party. Enthusiastically supported by the farming population in a fight against bribery and corruption, centralism, and bureaucracy, he was appointed premier in November, 1928, when he favoured the return of King Carol II, who had been forced into exile in 1926. Carol was reinstated in June, 1930. Forced by court intrigues to resign, and succeeded by his party colleague Mironescu, Maniu served again as prime minister for a few months during 1932-33. Soon Nazi Germany was pressing against Rumania and, by threats and the assassination of his colleagues, was trying to subdue Maniu. Yet he survived the Second Great War. Though Russian and Communist domination prevented his once more taking the helm, his National Peasant party was the strongest in opposition to the govt., which dissolved it, July, 1947, and brought Maniu to trial for conspiracy; he was sentenced in Nov. to solitary confinement for life.

**Manizales**. Town of Colombia, S. America, capital of the dept. of Caldas. It stands at an alt. of about 7,064 ft., at the junction of the transit routes over the Andes, 73 m. S. of Medellin and 100 m. N.W. of Bogotá. It has rly. connexion with Buenaventura on the Pacific coast. A prosperous trading centre, it exports gold, coffee, and cocoa. Pop. 86,027.

**Manjusri**. Buddhist personage, the so-called god of wisdom in China. Apparently a central Asian culture-hero, who introduced irrigation into Nepal, he was adopted into Mahayana Buddhism as a bodhisattva or Buddha elect. In



Manitoba. Map of the Canadian province situated between Ontario and Saskatchewan

silk paintings recovered by Stein in Chinese Turkistan he is depicted riding on a lion, and is sometimes represented with sword and book in hand. On the Wutai Mt., Shansi, 5th century temples are sacred to him; a 6th century stone image was found at Sarnath, near Benares; and bronze statuettes have come from Tibet and Java.

**Mankato.** City of Minnesota, U.S.A., the co. seat of Blue Earth co. At the junction of the Blue Earth and Minnesota rivers, 85 m. S.W. of St. Paul, it is served by the Chicago, Milwaukee and St. Paul, and Pacific and other rlys. Among the industries are the manufacture of foundry and machine-shop products, knitted goods, cement, bricks, flour, and shirts. It is situated in the midst of a farming and dairying region, near quarries of limestone and cement. Settled in 1853, Mankato became a city in 1868. Pop. 15,654.

**Manlius, MARCUS.** Ancient Roman hero. He received the surname of Capitolinus from the fact that in 390 B.C. he frustrated an attempt of the Gauls to take the Capitol, the only part of Rome not in their possession. The cackling of the sacred geese in the temple of Juno warned Manlius and his garrison that the Gauls were endeavouring to climb the rocks upon which the Capitol stood. Champion of the plebeians, the hostile patricians charged him with high treason, and secured his condemnation, whereupon he was thrown from the Tarpeian Rock.

**Manly.** Suburb of Sydney, New South Wales, Australia. It is beautifully situated on a peninsula forming the northern boundary of Sydney Harbour, 7 m. N. of Sydney, with which it is connected by ferry. Manly Beach, at the neck of the peninsula, is noted for its surf bathing. See Sydney.

**Mann, HEINRICH LUDWIG** (1871-1950). German novelist. Brother of Thomas Mann (q.v.), he

was born Mar. 27, 1871, at Lübeck. In 1933 he emigrated, eventually settling at Beverly Hills, California, where he died Mar. 12, 1950. His novels, usually containing biting, satirical criticism of



Heinrich Mann,  
German novelist

German petty-bourgeois servility, often contrasted with Renaissance figures and life enjoyment, while

very successful, were often subject of bitter controversy. The best known were Professor Unrat, 1905 (filmed, 1930, as *The Blue Angel*); and the trilogy *Die Goettersagen*, 1903; a drama of the French Revolution, *Madame Legros*, 1916, was also a considerable success.

**Mann, MARY ELIZABETH** (1848-1929). British novelist. Born at Norwich, Aug. 14, 1848, she began writing fiction after her marriage to Fairman Joseph Mann. She gained wide popularity with *The Patten Experiment*, 1899, and came to be known as a writer of well-characterised novels and short stories, being particularly successful in her presentation of the social atmosphere of East Anglia. She died July 14, 1929.

**Mann, THOMAS** (b. 1875). German writer, born at Lubeck, June 6, 1875. In 1933 he emigrated to the



Thomas Mann,  
German writer

U.S.A. Mann was one of the greatest figures in German literary life, and was accepted as a great writer when he settled in the U.S.A. During the Nazi ascendancy he wrote and made many broadcasts against Hitler. His novels and essays were successful when he was still a schoolboy; *Buddenbrooks*, 1901, a novel of patrician life in his Hanseatic home town, was a best-seller. Other noteworthy books were *Royal Highness*, 1909; *Death at Venice*, 1913; *The Magic Mountain*, 1924; the trilogy, *Joseph the Provider*, 1930-34; *Lotte in Weimar*, 1940. He also wrote many essays on historical, literary, and political themes. In 1929 Mann was awarded the Nobel prize for literature. An American citizen, he refused to reside in Germany after the Second Great War, but occasionally revisited Europe, affirming his belief in democracy and international cooperation. His daughter Erica married W. H. Auden.

**Mann, TOM** (1856-1941). British Labour leader. Born at Foleshill, Warwickshire, April 18, 1856, he began work on a farm at the age of 7, and in a coal-mine three years later, before becoming an engineer. He joined the Socialist movement in 1885, and was a leading figure in trade union circles, taking a prominent part in the 1889 dock strike. He became secretary of the Independent



Tom Mann,  
British politician

but never achieved election to parliament. He was several times imprisoned, and his views became increasingly extreme; in 1935 he was acquitted at Glamorgan on a charge of sedition. He published many works on socialist themes, and his memoirs appeared in 1923. He died March 13, 1941.

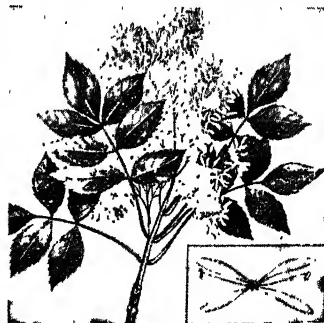
**Manna.** Edible coagulated saccharine juice which exudes from various trees or shrubs, including

the manna ash, and species of tamarisk, oak, larch, eucalyptus, etc. Another source of manna is *Alhagi maurorum*, a shrub of the family Leguminosae, native of W. Africa and S. Asia. It has oblong, undivided leaves and purple, pealike flowers in sprays. The food of the Israelites in the desert, described in Ex. 16, etc., is supposed to have been the exudation from this shrub, or more probably *Tamarix mannifera*.

**Manna Ash** (*Fraxinus ornus*). Tree of the family Olceaceae, native of S. Europe. It has opposite, toothed, lance-shaped leaflets, and small, greenish-white flowers in large clusters. It is largely grown



Manna. Flower spray  
of *Alhagi maurorum*



Manna Ash. Spray of leaves and  
flowers. Inset, single flower

in plantations in S. Italy for the production of commercial manna, used medicinally as a mild laxative. It is obtained by making incisions in the stem; the saccharine sap flows, and dries in flakes. The manna is light, porous, yellow in colour, and a valuable food.

**Mannerheim**, GUSTAVUS CHARLES, BARON (b. 1869). Finnish soldier and politician. The son of Count



G. C. Mannerheim, Finnish soldier and politician

Charles Mannerheim, he was born at Hilnes, in the co. of Åbo, Finland, and educated in the Finnish Cadet Corps at Fredrikshamn and in the Officers'

Cavalry School, St. Petersburg. He entered the Russian army and served in Manchuria, 1904-05, afterwards commanding a regiment of dragoons in Poland, and became A.D.C. to Nicholas II. During the First Great War he was in command of the Guards' brigade, and was a general at the head of a cavalry corps in 1917, when the Russian revolution broke out. He returned to Finland and raised the White Guards, which, with German assistance, defeated the Red Guards after much fighting. In 1918 the Finns formed a coalition government, and in Nov. elected him regent of Finland, but he was defeated at the presidential election held in July, 1919.

He reorganized the Finnish army and planned the Mannerheim line of fortifications across Karelia. This system of concrete forts, gun positions, machine gun posts and trenches stretched from the Gulf of Finland to Lake Ladoga, being based on the water system of the Vuoksi river. It was extended from Taipale to Sortavala, to cover the greater part of the western and northern shores of Lake Ladoga.

Promoted field-marshal in 1933, he led the Finnish army in the first war with Russia, 1939-40, and was again in command in the second war, 1941-44. When, in 1944, it became obvious that Finland was losing the war Mannerheim was made president on Aug. 1, and conducted the armistice negotiations with Russia. He resigned in March, 1946. See Finland: Russo-Finnish War.

**Manners**, CHARLES (1857-1935). A British singer. Born Southcote Mansergh, in London, Dec. 27,

1857, he became a bass singer after studying in Italy. He sang in Gilbert and Sullivan operas, with the Carl Rosa company, and under Augustus Harris at Covent Garden. Also a well-known choral singer, he had greatly furthered the promotion of opera in England when he died May 3, 1935. Manners married in 1900 Fanny Moody (1866-1945) who, born at Redruth, Cornwall, Nov. 23, 1866, made her début at Liverpool with the Carl Rosa in 1887. A soprano of great brilliance, she was prima donna at Covent Garden for four years. The Moody Manners opera company was founded 1897. She died July 21, 1945.

**Mannheim**. City of W. Germany. It is in Württemberg-Baden, at the confluence of the Rhine and the Neckar, and forms, together with Ludwigshafen (*q.v.*) on the W. bank of the Rhine, one of Germany's most important industrial centres and inland ports. It is



Mannheim arms

linked with this neighbouring palatinate city by two bridges—destroyed during the Second Great War, but later repaired. Mannheim, as an unimportant village, was known in 764; as a town, however, it was established in 1606 by the palatinate elector Frederick IV, and at first populated mainly by Huguenot and Dutch refugees. It was built strictly according to a plan and is therefore covered with a rectangular network of streets. Until heavily damaged by bombs, 1943-45, it contained many remnants of its 18th century rôle as electoral residency, containing a town hall, a Jesuit church, an armoury, an observatory, and a huge baroque palace with art and other galleries. Its main modern features were its industrial and commercial enterprises and the activity of its port, which dealt with more than 10,000 vessels and more than 5 million tons of goods annually. It was the home of the Daimler-Benz motor works, the leading German woodpulp and paper factories, and some of the most important chemical, rubber, wood, textile, cigar, and food industrial plants. There was also an active trade in coal, iron, and timber, though the heavy industries were mainly located outside the city. Mannheim possesses an academy of economics and law, a musical high school and many other edu-

cational establishments; it had three theatres, one of which, the National Theatre, saw the first performances of several of Schiller's plays during 1782-84. The city transferred from the jurisdiction of Bavaria to that of Baden in 1802. Mannheim was attacked by the R.F.C. during the First Great War, the raid on Christmas Eve, 1917, when one ton of bombs was dropped, being considered especially noteworthy. It was also a frequent target for Allied air forces during the Second Great War, being methodically reduced, mainly in five heavy attacks in the autumn of 1943, when many industrial targets were destroyed or heavily damaged. In 1945, owing to its position as German centre of communications on the Western front, it sustained four more heavy attacks. The city surrendered to the U.S. 7th army on Mar. 29, 1945, and became part of the U.S. occupied Württemberg-Baden state, separated from Ludwigshafen, which was in the French zone. Pop. before the Second Great War was 275,162.

**Mannheim**, KARL (1893-1947). Hungarian sociologist. Born at Budapest, March 27, 1893, and educated at the universities of Budapest, Berlin, Paris, and Heidelberg, he came to London in 1933 after he had been removed by the Nazis from the chair of sociology at Frankfurt university. He became lecturer in sociology at the London school of economics, being attached to the staff of the institute of education in 1941, and appointed to the chair of education at the institute in Dec., 1945. He made the study of education a lifelong interest, and it was to education that he turned for a solution of social and cultural problems. He died in London, Jan. 9, 1947. His many works include *Ideology and Utopia*, *Man and Society in an Age of Reconstruction*, and *Diagnosis of Our Time*.

**Mannheim**, LUCIE (b. 1905). German-born British actress. Born April 30, 1905, she studied for the stage in Berlin, and after appearing in Hanover, played in Shakespeare, Ibsen, and Chekhov at well-known Berlin theatres, 1924-34. She first appeared on the London stage in 1935, scoring an immediate success in *Nina*. One of her most noteworthy parts was that of *Nora* in *A Doll's House*, 1939. She married the actor Marius Goring.

**Manning**, HENRY EDWARD (1808-92). English cardinal. Born at Totteridge, July 15, 1808, he

was the son of a London banker and M.P. He was educated at Harrow and Balliol, Oxford. In 1832 he was made fellow of Merton, Oxford, and having been ordained was in 1834 given the rectory of Lavington, Sussex, being then an adherent of the Oxford movement. Having gained considerable note as a preacher, he was made in 1840 archdeacon of Chichester. He had married in 1833 Caroline Sargent (d. 1837), thus becoming related to Samuel Wilberforce. In 1838 he visited Rome in Gladstone's company and there met Cardinal Wiseman.



*Henry E. Cardinal Manning*

Manning went over to the Church of Rome in 1851 and after a short period of retirement was ordained. In 1857 he founded the London congregation of the Oblates of S. Charles at Bayswater, and became its superior, acting also as assistant to Wiseman. On the latter's death in 1865 he became archbishop of Westminster. He was made a cardinal in 1875. Active to the last, he died Jan. 14, 1892. He is buried under the high altar in Westminster cathedral.

Manning was a man of ascetic life, and an untiring worker. He was a supporter of the temperance movement, and had a real sympathy with the labouring classes, evidenced by his share in settling the dock strike in 1889, and by his presence on the royal commission on housing. On the other hand he was intolerant, while he showed a certain lack of scruple in seeking his ends and in securing advantages for his Church. Towards the papacy he adopted a strong ultra-montane attitude, in contrast to the Gallican position of most of the R.C. families in England. But the outstanding fact of his life is the enhanced position which his labours and personality secured for the R.C. Church in England. He figures in Beaconsfield's *Lothair* as Cardinal Grandison. He wrote *The Temporal Mission of the Holy Ghost*, 1865; *The Eternal Priesthood*, 1883. *Consult Lives*, A. W. Hutton, 1892; F. A. Gasquet, 1895; Shane Leslie, 1921.

**Mannings, THE.** Husband and wife, executed for the murder of

Patrick O'Connor, on Aug. 9, 1849. O'Connor was a former lover of the wife, Maria Manning, and the relationship was continued after the marriage, and condoned by Manning. The pair plotted finally to obtain O'Connor's money, and the story of their cold-blooded conspiracy has become a classic in criminal literature. They invited O'Connor to a dinner of roast goose, killed him on his arrival in the house, flung his body into the already prepared grave under the flags of the kitchen floor, and then ate a hearty meal while discussing their next steps. Mrs. Manning went to the lodgings of her victim and ransacked them for valuables, while her husband covered the dead man with lime. The two were tracked down through a friend of O'Connor's knowing of his intrigue with Maria Manning, and were hanged at Horsemonger Lane Gaol, Nov. 13, 1849, the woman in a black satin dress. The execution was witnessed by Dickens, who wrote a remarkable and moving letter to *The Times* on the horrors of public executions.

**Manningtree.** Market town of Essex, England. It stands on the estuary of the Stour, 8 m. N.E. of Colchester, and is a rly. junction. There is a trade in wheat and malt, while malting is the chief industry. The principal buildings are the church of S. Michael and the public hall. The town is a good centre for the Constable country in Suffolk, East Bergholt, where the artist was born, being 3 m. away. Pop. 790.

**Mannite** or **MANNITOL.** Sweet substance discovered by Proust in 1806, prepared from manna, the dried exudation from various species of the ash tree. Mannite occurs also in other vegetable substances, e.g. celery roots and larch sap, and is also formed in the lactic and viscous fermentation of sugar.

**Mannock, EDWARD** (d. 1918). British airman. During the First Great War he joined the air force from the Royal Engineers, being awarded the M.C. and bar, and the D.S.O. and two bars. He was brought down in flames over the German lines and killed, July 26, 1918, by which date he had accounted for 50 German aeroplanes. A major, he was posthumously awarded the V.C.

**Manns, SIR AUGUST FREDERICK** (1825-1907). Anglo-German conductor. Born at Stolzenberg, near Stettin, March 12, 1825, he learned to play several instruments as a boy. At Elbing he was in the town orchestra, and later

belonged to a regimental band at Danzig; he conducted the music at Kroll's Garden, Berlin, and was bandmaster at Cologne and Königsberg. In 1854 Manns settled in London as assistant conductor at the Crystal Palace, becoming conductor in 1855. He raised the music there to a high pitch of excellence, and by his generous encouragement of British composers exercised a powerful influence on musical progress in England. During 1883-1900 he officiated at the Handel Festivals. Having become a naturalised British subject, Manns was knighted in 1903. He died March 1, 1907.

**Manny, SIR WALTER DE** (d. 1372). English soldier. Born in Hainault, he was originally named Mauny, and his father had been a soldier in the English service. He came to England in the train of Philippa of Hainault, wife of Edward III, in 1327, and soon made a reputation as a fighter. He served with distinction in Edward's French wars; in 1337 he led a raid on the island of Cadzand and was in command of other expeditions. He was made a baron in 1347 and K.G. in 1359. Manny helped to found the Charterhouse. His wife, Margaret, a granddaughter of Edward I, was made duchess of Norfolk.

**Manning, ROBERT** (c. 1264-c. 1340). An English chronicler. Known also as Robert of Brunne, now Bourne in Lincolnshire, he became a monk and spent most of his life in monasteries in that county. His principal work is the poem *Handling Synne*, a free translation of the *Manuel des Pechiez* of William of Waddington, which was a valuable and quaint commentary on early English life. He also wrote *The Story of Inglande*, which traces the descent of a king of Britain to Aeneas, describes the Trojan War, and includes a close version of Wace's *Brut d'Angleterre*. This work had great effect upon the language in its rejection of Teutonic and adoption of French words.

**Manod.** Quarry, near Blaenau Festiniog, Merioneth, Wales. During the Second Great War the extensive workings of this quarry were fitted with air-conditioned brick chambers, in which were housed the pictures removed for safety from the National Gallery.

**Manoel.** Name of two kings of Portugal. Manoel I, king from 1495 to 1521, is known as the Fortunate. He sent out Vasco da Gama and other explorers, and did much for literature and art.



Manoel II (1889–1932) was born in Lisbon, Nov. 15, 1889, the second son of King Carlos I. He was made duke of Beja, and succeeded to the throne Feb. 1, 1908, on the murder of his father and elder brother. In Oct., 1910, when the republic was established, he took refuge in England, staying first with his mother's brother, the duke of Orleans, at Wood Norton, near Evesham, Worcestershire, and later settling at Twickenham. There he devoted himself to a life of culture, and made a reputation as a musician, a bibliophile—he was the leading private collector of works of the Portuguese renaissance—a historian, and a patron of athletics and the arts. In 1913 he married Princess Augusta Victoria of Hohenzollern-Sigmaringen. There were several abortive attempts to restore him to the throne. For political reasons his offer to serve in the British army in the First Great War could not be accepted. He died July 2, 1932, leaving no children.

**Manoeuvres.** Large-scale exercises carried out by the fighting forces to train leaders and test methods of war. Military manoeuvres were introduced by Frederick the Great in the Prussian army in 1753 and adopted by most other Continental countries after the Napoleonic wars; after 1870 they were everywhere greatly influenced by German practice. The available force was generally divided into two parts, and directed to engage in operations in accordance with a given plan. Manoeuvres were held at the end of the year's military training, after the harvest, to avoid damage to crops. They were introduced in England in 1898.

Naval manoeuvres are exercises carried out at sea on similar lines. First introduced in the British navy in 1885, they were generally held every summer. Air manoeuvres were held after the establishment of the air force as a separate arm. The term manoeuvres has now been officially discarded in favour of fleet exercises, combined exercises, etc.

A vital principle of manoeuvres is that the intended war-time leaders should be engaged in them, so as to learn the capacity of the forces they will command in the event of war. The weakness of peace-time manoeuvres lies in the necessity of avoiding damage and casualties. Although valuable lessons can be learned, given sufficiently high quality in the directing staff, it is notable that

the conclusions drawn have been as often wrong as right, and as often disregarded as not. In 1913, for instance, two fleets representing in strength approximately the British and the German met in an exercise; after an indecisive engagement the weaker fleet succeeded in getting away. Had the proper deductions been made, the German fleet might not have escaped after the battle of Jutland (*q.v.*). On land, again, the Allies in 1940 were at fault over the value of such systems as the Maginot line, and over the relative effectiveness of armour and armour-piercing weapons; problems which the Germans had solved correctly by using the Spanish civil war as a testing-ground. The Germans had used a proportion of live ammunition in manoeuvres, both in small arms and artillery, before the Second Great War; and its use was adopted by the British in some of their large-scale exercises between 1941 and 1944. The death-rolls and material damage arising would of course be out of question in peace-time; but the lessons were powerfully brought home.

Manoeuvres in war are the tactical or strategical moves by which an enemy is attacked, or his attack countered. To render a manoeuvre successful, a commander requires a combination of surprise and of local superiority over the enemy.

**Man-of-War Bird.** Popular name for the frigate bird (*q.v.*), and also given to the albatross.

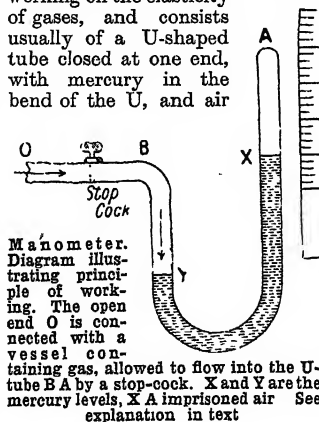
**Manometer** (Gr. *manos*, rare; *metron*, measure). Instrument for measuring the pressure or density of a gas. The simplest form of manometer is the barometer, which measures atmospheric pressures. The ordinary form of the instrument depends for its principles of working on the elasticity of gases, and consists usually of a U-shaped tube closed at one end, with mercury in the bend of the U, and air

in the closed limb. In the figure the open end O is connected with the vessel containing the gas the pressure of which is to be measured. If the pressure is greater than that of the atmosphere, the mercury is forced up the closed end of the tube, and by means of a graduated scale the pressure exerted by the gas is known. Another form of manometer is typified in the steam gauge. Here a piston is moved by the pressure of the steam and operates an indicator controlled by a spring, so that the steam pressure may be read.

**Manon.** Heroine of Manon Lescaut, romance by Abbé Prévost. Three operas have been founded on her story: by Auber, to a libretto by Scribe, first produced Paris, 1856; by Massenet, to a libretto by Meilhac and Gille, first produced Paris, 1884, and by the Carl Rosa co., Liverpool, 1885; and by Puccini (Manon Lescaut) to an anonymous libretto, first produced Turin, 1893, and Covent Garden, 1894.

**Manor.** Name given in England from the 11th century to an estate of a certain kind. The system was also found in France, Germany, and other parts of Europe where feudalism prevailed, and something akin to it elsewhere. The origin of the manor has given rise to discussion. A Roman parentage has been claimed for it, but others think it originated in the free village community of the Teutons. F. W. Maitland has put forward the theory that the manor was primarily a house or estate which was assessed separately for the geld, or taxes, of Norman times. This, he thinks, explains not only the variations in the size of the manors, but solves other difficulties. Others, however, think this explanation too narrow, and describe a manor as "a complex of rights over lands and tenements."

As revealed in Domesday Book and later authorities, the manors in England varied very much in size and in other ways, but certain features appear to have been common to all. Each had a lord and tenants called villeins, who owed him certain duties, and on each the land was divided into the demesne, or holding of the lord, the arable and meadow in which the villeins had also a share, and certain woods and commons. The arable was divided into strips, each tenant having an equal number. The villeins paid certain dues to the lord, and, moreover, were bound to work for him for a certain number of days in the week or





Manor House at West Hoathly, Sussex. An example of the Tudor manor house of the late 16th century  
By courtesy of Country Life, Ltd.

year. In addition to the villeins there were on many manors a poorer class of tenants called cot-  
ters, or bondars. All were in a  
sense unfree, but the villeins had  
certain rights in their holdings  
which were recognized by the law.  
Other classes of tenants appear in  
various parts of England, especially  
socmen, probably freemen who  
held land on condition of service  
to the lord of the manor.

A feature of the manor was the  
manorial courts. These exercised  
a little criminal jurisdiction, but  
they were mainly occupied with  
civil business concerned with the  
manorial holdings, and from the  
records which they kept comes the  
term copyhold. The chief officials  
of the manor were the steward, who  
presided over the courts, the bailiff,  
who managed the lord's own prop-  
erty, and the reeve, chosen by the  
tenants to look after their interests.

Before the end of the Middle  
Ages the system began to decay.  
The villeins were attracted to  
towns, wherein residence for a year  
and a day made them freemen.  
Courts, copyholds, and other ves-  
tiges of the system survived into  
the 20th century, but the Law of  
Property Act, 1922, provided for  
their extinction. See Copyhold;  
Feudalism; Villeinage; consult  
Domesday Book and Beyond, F.  
W. Maitland, 1897; Growth of  
the Manor, P. Vinogradoff, 1905.

**Manor House.** In feudal times,  
the residence of the lord of the  
manor and his retinue. The hall  
was the most important chamber,  
and in addition to this were the  
solar, i.e. the lord's private cham-  
ber, the kitchen, servery or general  
service room, larder, and buttery.  
During the 13th century windows  
began to be glazed. The hall con-  
tinued for some centuries to be the  
principal apartment; but the solar  
was enlarged and used as a "with-

drawing room" (hence drawing-  
room), bedrooms  
and sitting-rooms  
were added, and  
the family living-  
rooms were separ-  
ated from the ser-  
vants' quarters  
and offices.

The plan con-  
sisted of a hall,  
with family apart-  
ments on one side,  
and offices at the  
other; or the  
rooms were group-  
ed round a court.  
Larger manor  
houses of the late

16th century are generally tri-  
lateral in plan. The hall became  
less important as retinues grew  
smaller. Towards the end of the  
16th century, a separate dining-  
room for the family became usual.  
After Elizabeth's reign the manor  
house loses its distinctive archi-  
tectural character.

**Manor Park.** Parish and resi-  
dential district of Greater London,  
in the co. of Essex, England. Lying  
between Forest Gate and Ilford,  
with a rly. station, the eccles.  
parish was formed from that of  
Little Ilford in 1901. The church  
of S. Barnabas was consecrated in  
1900. Here are Manor Park and  
the City of London cemeteries. The  
name of Manor Park is given also  
to districts of Lee, S.E., and else-  
where.

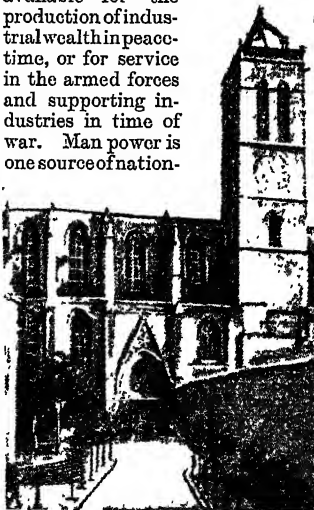
**Man Power.** Term used to de-  
note the proportion of a nation's  
adult population  
available for the  
production of indus-  
trial wealth in peace-  
time, or for service  
in the armed forces  
and supporting in-  
dustries in time of  
war. Man power is  
one source of nation-

al wealth, greater in the case of an  
industrialised nation. Thus, the  
man power of Great Britain's pop.  
of less than 50,000,000 is a source  
of greater national wealth than  
that of the sub-continent of India,  
which exceeds 400,000,000. Simi-  
larly, a highly industrialised coun-  
try like the U.S.A. is richer in the  
man power available from its pop.  
of 130,000,000 than is the U.S.S.R.  
with a pop. of 193,000,000.

In time of war the allocation of  
man power in such proportion that  
the maximum numbers can be  
drafted into the fighting services,  
while ensuring that sufficient  
workers are retained in industry to  
supply the fighting services, is one  
of the most difficult administrative  
problems. In the Second Great  
War the democracies were obliged  
to follow the example of the dic-  
tatorships and direct the adult  
population to the services or in-  
dustries in which their labour  
could best be employed. In the  
U.K., by the Emergency Powers  
(Defence) Act of May, 1940, the  
ministry of Labour was given  
authority to mobilise man power  
and direct it into the channels most  
likely to increase the efficiency of  
the war effort. At one time a  
nation's strength in man power  
was judged by the number of  
troops it was able to put in the  
field, but in modern warfare only a  
comparatively small proportion of  
the population is available for the  
fighting services. Between the  
years 1939 and 1945 only 4,542,000  
men and women were available for  
the fighting services out of a pop.  
of 50,000,000; all other adults  
capable of working were required  
to supply civil and warlike needs.

After the Second Great War,  
Great Britain's lack of dollar ex-  
change demanded the maximum  
export of manufactured goods in  
order to gain exchange for the im-  
port of food and raw materials.  
Hence, in 1947-50 the govt. again  
took powers to direct man power,  
this time into industries making  
goods for export, thus preventing  
shortage of man power in many  
industries, especially coalmining  
and textile production.

**Manresa** (anc. Munorisa). Town  
of Spain, in the prov. of Barcelona.  
It stands on the river Cardener,  
spanned by Roman and modern  
bridges, 40 m. by rly. N.N.W. of  
Barcelona. It has a beautiful  
Gothic church, a church built over  
the grotto associated with Loyola's  
visions, and a Dominican monas-  
tery. A busy rly. junction, it manu-  
factures cotton, woollen, and  
silken goods, chemicals, etc. Pop.

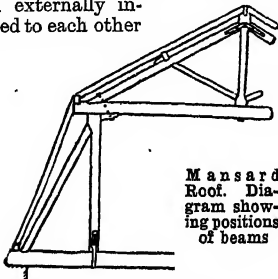


Manresa, Spain. Main entrance of  
the cathedral of Our Lady of Dawn

30,465. During the Spanish Civil War, Manresa was captured by the Nationalist forces of Gen. Franco, Jan. 23, 1939, during their advance on Barcelona.

**Manrique, JORGE** (1440-78). Spanish lyrical writer. Son of the count de Paredes, he was a member of a family of poets and soldiers. His Coplas (Couplets) brought him fame and were translated by Longfellow.

**Mansard.** Type of roof named after François Mansart (*v.i.*). It consists of four planes hinging on and externally inclined to each other



at an angle wide enough to provide ample room space within its limits, and generally fitted with dormer windows. Structurally inadequate in its simplest forms, it has to be strengthened by tie beams. It was abundantly employed in French neo-classic architecture of the 17th century, and has since been used for large buildings in England and Germany where space and external artistic effect are important. The roof may be trussed or untrussed.

**Mansart** or **MANSARD, FRANÇOIS** (1598-1666). French architect. Born in Paris, he was commissioned by the duke of Orleans in 1635 to design the rebuilding of the château at Blois, and in 1642 undertook the famous Maison (now Maison-Laffitte) for René de Longueuil. His greatest work was the monastery of Val de Grâce, Paris, (1648), in the execution of which he was superseded by Richelieu's favourite, Lemercier.

**Mansart, JULES HARDOUIN** (1646-1708). French architect. Born in Paris, nephew and pupil of François Mansart, he became, in 1675, the principal architect of Louis XIV, his most important work being the palace of Versailles (1678-1708). His other buildings included the château of Clagny for Mme. de Montespan (1676), the dome of the Invalides (1693), the château of Marly (1683), the façade of the town hall at Lyons, and the Place Louis-le-Grand, Paris. He was made a count, and died suddenly at Marly.

**Mansbridge, ALBERT** (b. 1876). British educationist. Born at Gloucester, Jan. 10, 1876, he was educated at elementary schools and Battersea grammar school. Founder of the Workers' Educational Association in England, 1903, he was a member of government committees on education, including the consultative committee of the board of Education, 1906-12 and 1924-39. He was expert adviser to the British and Australian army education services, 1918-1919, and lecturer on the Lowell foundation, Boston, U.S.A., 1922 and 1934. He was created C.H., 1931. His published works include *An Adventure in Working Class Education*, 1920; *Talbot and Gore*, 1935; *The Trodden Road*, 1940; *The Kingdom of the Mind*, 1944.

**Manse** (medieval Lat. *mansa*, dwelling). General name for the dwelling-house of a Scottish minister. Originally the house of a landowner with the land attached, the term was later restricted to the house and land attached to churches of the established church of Scotland. The duty of providing and maintaining the manse in repair rests upon the landed proprietors of the parish, though if they can get it declared a free manse the incumbent must do the repairs after the first 15 years. The term is also occasionally applied to the dwelling-house of a minister of any Free Church in England and the U.S.A., more particularly if it is the property of the church.

**Mansel, HENRY LONGUEVILLE** (1820-71). British philosopher and divine. Born at Cosgrove, Northamptonshire, Oct. 6, 1820, he was educated at the Merchant Taylors' School, London, and S. John's College, Oxford. He became fellow and tutor of S. John's in 1843, but was transferred in 1855 to Magdalen as reader in philosophy. In 1859 he was made Waynflete professor of philosophy, and in 1867 professor of ecclesiastical history. From 1868 until his death, July 30, 1871, he was dean of S. Paul's. In his philosophical writings Mansel was in the main a supporter of Sir W. Hamilton, but he was also influenced by the older

Scottish school and by Kant. He adopted the theory of the relativity of knowledge; external perception provides us with appearances only. He was hostile to the idealism of Hegel, then making way at Oxford. His works include *Prolegomena Logica*, 1851; *Metaphysics*, 1860; and *The Gnostic Heresies*, 1875.

**Mansfeld, ERNST, COUNT VON** (c. 1580-1626). German soldier. He was illegitimate son of Peter, prince von Mansfeld, governor of Luxemburg, where he was born.



Count Ernst von Mansfeld, German soldier After Van Dyck

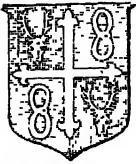
He served first in the imperial army against the Turks in Hungary, but afterwards joined the emperor's foes. When the Thirty Years' War began, known as an able soldier, was given a command to help the Bohemians. He fought with varying success for Frederick, elector palatine, against Tilly, but his troops were as harmful to their friends as to their foes, for Mansfeld was one of the worst of the mercenary leaders of that time. He took a command under the Dutch government, but is better known as the leader of the force sent by James I to restore the king's son-in-law, Frederick, to his electorate in Germany. This failed, and, after a defeat at the hands of Wallenstein, Mansfeld died in Bosnia. Nov. 29, 1626. The family of Mansfeld, known in Germany, mainly for the military prowess of its members, for about seven centuries, became extinct about the year 1780.

**Mansfield.** Mun. borough and market town of Notts, England. It stands on the Maun, 139 m.



Mansfield, Nottinghamshire. Old parish church of St. Peter from the south-east

Valentine



Mansfield arms

from London and 13 m. N. of Nottingham, with which it has rly. connexions. The chief buildings are S. Peter's church, a fine old edifice, S. John's church, a fine modern one, the town hall, and the grammar school, founded in the 16th century. There are manufactures of hosiery, shoes, machinery, textile fabrics, decorated tin ware, etc., while around are coal mines, to the opening of which is due the rapid growth of the town since about 1890. On the edge of Sherwood Forest, in early times a royal hunting ground, Mansfield was often visited by royalty. To the S.W. is the King's Mill, associated with the story of the miller of Mansfield and Henry II. Mansfield became a borough in 1891, and gives its name to a county constituency. It has a museum and art gallery. Market days, Mon., Thurs., and Sat. Pop. est. 49,000.

**Mansfield**, City of Ohio, U.S.A., the co. seat of Richland co. It is 66 m. S.W. of Cleveland, and is served by the Pennsylvania and other rlys. and an airport. An important industrial centre, it contains factories manufacturing electrical appliances, sheet steel and tinplate, and farming machinery. Settled in 1808, it was incorporated in 1828 and became a city. Pop. 37,154.

**Mansfield**, EARL OF. British title borne since 1776 by the family of Murray. The first holder was the lawyer, William Murray. He left no sons, but by special remainder was succeeded by his nephew, David Murray, 7th Viscount Stormont (1727-96). This Scottish title dates from 1621, when it was given by James I to Sir David Murray. The 2nd earl was in turn an ambassador to Austria and to France, a secretary of state, and a lord president of the council. The earldom is still held by his descendant, Mungo David Malcolm Murray (b. Aug. 9, 1900), becoming 7th earl in 1935. He had been M.P. for Perth, 1931-35, served on various government commissions and was well known as an ornithologist. The earl's chief seat is Scone Palace, near Perth, and his eldest son is known as Lord Scone.

**Mansfield**, WILLIAM MURRAY, EARL OF (1705-93). English judge. A son of the 5th Lord Stormont, he was born at Scone, near Perth, March 2, 1705, and educated at

Westminster and Christ Church, Oxford. Called to the bar in 1730, he became M.P. for Borough-

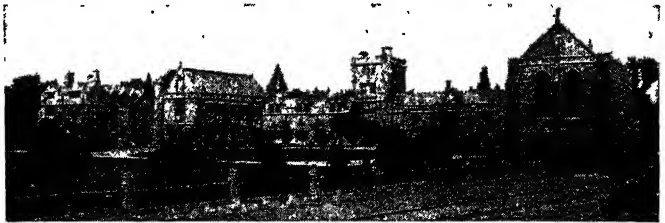


*Mansfield*  
After Reynolds

bridge and solicitor-general. 1743; attorney-general, 1754; and lord chief justice, 1756. He held office in the duke of Newcastle's cabinet and was one of the weightiest and most eloquent Tory leaders in the House of Lords, although he refused to be distracted by politics from his judicial career. His decisions on commercial law were important, but his legal learning has been questioned. As a poli-

In 1911 she published her first collection of short stories, *In A German Pension*. Much influenced by Chekhov, she established the intellectual position of the contemporary short story in English literature. Later collections included *Bliss*, 1920; *The Garden Party*, 1922; *The Dove's Nest*, and *Poems*, 1923; and a posthumous volume *Something Childish*. She died at Fontainebleau, Jan. 9, 1923. Her journal appeared in 1927; her letters in 1928; collected stories in 1946. *A Life* by R. E. Mantz and J. M. Murry was published in 1933.

**Mansfield College**. Non-affiliated college at Oxford for training men for the Nonconformist ministry. It originated with Spring Hill College, Birmingham, where students were trained to become Congregational ministers. In 1886,



Mansfield College, Oxford. Front of college buildings, with the chapel forming the wing on the right  
Perth

tician he was fiercely attacked by Junius, and incurred odium by his falsely alleged bias in conducting the trial of that writer's printers and publishers. He gave the famous decision that slaves are free when they land in England. Owing to his support of the R.C. relief bill in 1778, his house in Bloomsbury was burnt by the Gordon rioters in 1780. Having received an earldom in 1776, Mansfield retired from the bench in 1788, and died March 20, 1793. See Ken Wood. *Consult* Life, C. H. S. Fifoot, 1936.

**Mansfield**, KATHERINE (1890-1923). New Zealand-born British writer. Born at Wellington, N.Z., she came to England as a child, and settled in London. In 1913 she married J. Middleton Murry (q.v.) with whom she was associated in the publication of the review *Rhythm*, and contributed leading articles to *The Athenaeum* under her husband's editorship.



Katherine Mansfield,  
British writer

under the principalship of A. M. Fairbairn, this was re-founded at Oxford, a fine block of buildings, comprising chapel, class-rooms, and principal's house, being opened in 1889. The name Mansfield was given to it to honour one of the benefactors of Spring Hill. It is a post-graduate theological college, open to ministerial and missionary candidates of all evangelical churches and has become residential.

**Mansfield Park**. Novel by Jane Austen. Published anonymously in 1814, it is notable for its admirably drawn scenes of English country society and the lifelike characters of Mrs. Norris, Henry and Mary Crawford, and the Price family. The scene is set principally in Northants where, at Mansfield Park, the heroine Fanny Price lives with her uncle and aunt, Sir Thomas and Lady Bertram. Of greater maturity than *Pride and Prejudice*, this novel ranks with *Persuasion* in its restraint and depth of observation.

**Mansfield Woodhouse**. Urban dist. of Notts, England. It is 2 m. N. of Mansfield, with a rly. station. It is in a coal mining district, while limestone and sandstone are also worked. Pop. 17,000.

**Mansion House.** Name given to the official residence of the lord mayor of London, and also applied to other buildings of the kind. It stands opposite the Bank of England in the heart of the city. The foundation stone was laid Oct. 25, 1739, but the building, designed by George Dance the elder, was not finished till 1753. The front façade is screened by a portico of six fluted Corinthian columns, the pediment enclosing a design by Sir Robert Taylor, in high relief, of a female figure crowned with turrets, symbolising the city of London. The building is of Portland stone. The principal apartment is the Egyptian Hall, designed by the earl of Burlington after Vitruvius, 90 ft. by 60 ft., where banquets and various functions are held. Corinthian columns support the roof of this room, which is gorgeously decorated. The city police court is on the first floor.

There is also a Mansion House in Dublin, the official residence of the lord mayor since 1715. This is in Dawson Street, and contains the Round Room, built in honour of George III, and still the largest meeting place in the city. Here was held the first session of Dáil Eireann; here was signed the Anglo-Irish treaty of 1921.

**Manslaughter.** Term used in English law. It means unlawfully slaying another without malice aforethought. Manslaughter may be almost an accident, or very nearly a murder, or any homicide between those two. Thus, to kill a man upon great provocation, "upon a sudden heat," is manslaughter removed from murder only by the fact of the provocation. If the driver of a vehicle drives with such negligence that a jury finds his negligence criminal, and runs over and kills someone, he also is guilty of manslaughter, though he had no intention of harming the person slain. Manslaughter is a felony; and its maximum punishment is imprisonment for life. See Murder.

**Manson, JAMES BOLIVAR** (1879-1945). British art critic and painter. Born in London, June 26, 1879, he was educated at Dulwich, and studied art at Heatherley's, Lambeth art school, and Julian's, Paris. On the foundation of the London Group (*q.v.*) he became its secretary. Assistant keeper at the Tate Gallery, 1917-30, he was then di-

rector until 1938. Chiefly with portraits and landscapes, he exhibited at the New English art club and



Mansion House, London. Front façade of the lord mayor's official residence

the London Group, and is represented at the Tate by Michaelmas Daisies, purchased in 1923. His publications included studies of Rembrandt (1923) and Degas. He died July 3, 1945.

**Manson, SIR PATRICK** (1844-1922). British physician. Born Oct. 3, 1844, at Fingask, Aberdeenshire, he took his medical degree at Aberdeen University. He specialised in parasitology and became physician and medical adviser to the Colonial office. He was the first to suggest that the malarial parasite was carried by the mosquito, which theory was established by experiment as correct by 1900. He published Goulstonian Lectures, 1896; Tropical Diseases, 1898. Manson, who was F.R.S., was knighted in 1903, and died April 9, 1922. See Malaria; Ross, Sir R.; consult Life, P. Manson-Bahr and A. Alcock, 1927.

**Manson-Bahr, SIR PHILIP** (b. 1881). British physician, educated and trained at Rugby, Cambridge university, and London Hospital. He married the daughter of the above Sir Patrick Manson, and added her surname to his own. Specialising in tropical medicine, he was in charge of research expeditions to Fiji, 1909, and Ceylon, 1912. Consulting physician to the Colonial office from 1929, he was a director of the clinical division of the London school of hygiene and tropical medicine and senior physician at the hospital for tropical diseases. He contributed the article on malaria to this Encyclopedia. He was knighted in 1941.

**Manstein, FRITZ ERICH VON** (b. 1887). German soldier. Twelfth child in an E. German military family named von Lewinski, he was adopted soon after birth by relatives named von Manstein. Becoming a soldier, he was chief

of staff to Rundstedt in Poland during Sept.-Oct., 1939. He captured Sevastopol July 3, 1942, being promoted F.M. on July 1. Commanding in the Ukraine in 1943, he was responsible, Nov.-Dec., for the only serious setback the Russians encountered in reconquering their country. Removed from the command in S. Russia in April, 1944, he was arrested at a hospital in Schleswig-Holstein Aug. 31, 1945, and taken to England. He testified for the German high command and general staff before the Nuremberg tribunal, Aug. 9, 1946. He was released from a p.o.w. hospital at Diss, Norfolk, in July, 1949; but Polish and Russian accusations that he was a war criminal led to his trial before a British military court at Hamburg where he was condemned, Dec. 19, 1949, to 18 years' (later reduced to 12 years') imprisonment, the chief charge sustained against him being that he allowed the killing of hostages.

**Manston.** R.A.F. station in Kent, England. Situated on the coast 2½ m. E. of Margate, it was opened during the First Great War as a R.N.A.S. training centre, converted later into a training centre for R.A.F. flight mechanics and armourers, and a passing out rehabilitation centre. During the Second Great War, Manston was an advanced base of No. 11 fighter group, and in Aug., 1940, was put out of action for some weeks. The camp had air raid shelters 80 ft. below ground in tunnels made by German prisoners in 1917-18 as ammunition stores. The aerodrome covers 1,400 acres, and after the Second Great War passed to R.A.F. transport command.

**Mansurah** or **EL MANSURA**. City of Lower Egypt. Situated at the junction of the Damietta branch of the Nile and a canal which goes to Lake Manzala, it is a flourishing commercial town and the centre of a large cotton growing district. Here is the old fortress of S. Louis of France, recently restored, where he was imprisoned in 1250. Near are the ruins of the temple of Isis. Pop. 69,036.

**Manta.** Coastal town of Ecuador, in Manabi prov. On the S. of Manta Bay, it is a port for cacao, coffee, fruit, ivory, nuts, and the Jipijapa (so-called Panama) hats. Pop. 8,000.

**Mantalini, ALFRED.** Character in Dickens's novel Nicholas Nickleby. An amorous dandy, he spends the money of his wife, a fashionable London mantua maker, until his extravagance brings them both





Mantegna. One of nine frescoes illustrating The Triumph of Caesar, by Andrea Mantegna; painted 1484-90, they are now in Hampton Court Palace

to poverty. His speech is as extravagant as his habits: inconsequential and sprinkled with "dem" and "demd," it helps to make him one of the author's most memorable and entertaining grotesques.

**Mantaro.** River of centra. Peru. Rising in the prov. of Junin, near Lake Chinchaycocha, it flows S.E. into Huancavelica. It breaks through the Andes and, turning N.E., joins the Apurimac, the united stream forming the Ené. Its length is about 280 m.

**Mantegna, ANDREA** (1431-1506). Italian painter. Born at Vicenza, he was adopted by Squarcione, and painted an altar-piece, The Madonna in Glory, for S. Sofia, Padua, 1448. He came early under the influence of Donatello,



Andrea Mantegna, Italian painter

married the daughter of Jacopo Bellini, decorated the Eremitani church at Padua, 1450-59, and painted a triptych, The Madonna Enthroned, for the church of S. Zeno, Verona. By 1455 he was virtually chief of the Paduan school, and had painted his fine Agony in the Garden, now

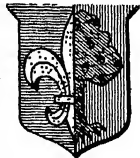
in the National Gallery, London. Invited to Mantua by the marquess, Lodovico Gonzaga, about 1460, he painted the triptych, The Adoration of the Magi, for the chapel of the old castle in that city. His great series of nine pictures, The Triumph of Julius Caesar, in Hampton Court Palace, was executed 1484-90. In 1488, at the request of the pope, Mantegna decorated the Belvedere chapel in the Vatican with frescoes. He painted the Madonna della Vittoria, now in the Louvre, about 1495.

Mantegna, who died Sept. 13, 1506, was one of the greatest Italian painters, and his influence was immense. His style, formed on the antique, is severe and statuesque. Most of his decorations, painted on dry plaster, have decayed. His easel pictures were mostly executed in tempera. An expert engraver, he introduced to Mantua the art of engraving on copper with the burin. There are Lives by P. Kristeller and P. Yriarte, both 1901.

**Mantelpiece.** Upper part or cloak of a fireplace. In Romanesque architecture they were comparatively small and of the hood type. In Gothic decoration the hood was still the predominating form; but it was often of huge dimensions. With the Renaissance the canopy was replaced by rectangular structures, adorned

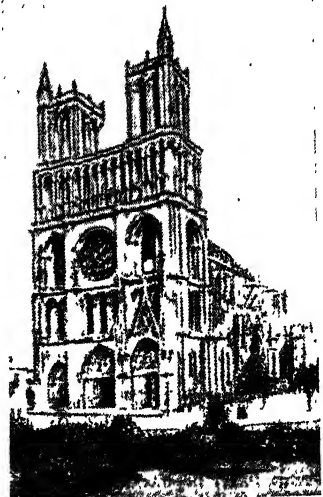
with columns, pilasters, cornices, and pediments. Heavy carving was introduced, decorated with figures, animals, flowers, and heraldic symbols. In Tudor and Jacobean England there was a mixture of Gothic and Classic, quaint but not unpicturesque. Inigo Jones and Christopher Wren introduced more purely architectural forms. Stone, marble, wood, faience, and metal have been used for mantelpieces, the marble and wood often being richly inlaid. Mantelpieces went out of fashion about the middle of the 18th century, and came into vogue again towards the end of the 19th; but the 20th century reversion to simplicity and the increasing use of gas and electric radiators did not encourage further development. See Chimney-Piece; House.

**Mantes-Gassicourt.** Town of France, in the dept. of Seine-et-Oise. Formerly called Mantes, and sometimes Mantes-la-Jolie, it lies on the left bank of the Seine, 35 m. by rly. W. of Paris: it is the junction of the Paris-Dieppe and Paris - Cherbourg



Mantes arms

rly. lines. There is trade in cereals, fruits, etc., and tanning is carried on. Noteworthy buildings included a Gothic church of Notre Dame, chiefly from the late 12th century, with later additions, a 15th century hôtel de ville with a fine staircase, and the tower of S. Maclou church, destroyed in the Revolution.



Mantes-Gassicourt, France. W. front of the Gothic church of Notre Dame



William the Conqueror was fatally injured by a fall from his horse at Mantes in 1087. Pop. 13,181.

During the liberation of France, 1944, U.S. armour reached Mantes-Gassicourt, Aug. 19; next day U.S. infantry established the first bridgehead across the Seine near by from which on the 22nd they began a strong offensive.

**Manteuffel**, EDWIN HANS KARL, FREIHERR VON (1809–85). German soldier. Born Feb. 24, 1809, he entered the Prussian army in 1827. In 1864 he served against the Danes, being made governor of Slesvig when the war ended. He led a division and then an army in the war of 1866. In 1870 he led a corps against France before becoming commander of the army in succession to Steinmetz. During 1871–73 he was at the head of the army of occupation. Made a field-marshal, he was governor of Berlin; and from 1879 of Alsace-Lorraine, until he died on June 17, 1885.

**Mantilla** (Sp., little mantle). Veil of black or white lace, the national head-dress of Spanish women, and also worn in Portugal. Originally it was a light cloak or cape, the material being usually a costly fabric.

**Mantineia**. City of Arcadia in ancient Greece, which gives its name to two famous battles. The first was fought in 418 B.C., and resulted in a victory for the Spartans over the combined forces of the Argives, Arcadians, and Athenians. The second was fought in 362 B.C. between the Spartans and the Thebans under Epaminondas, who was victorious, but fell in the battle. The site was excavated in 1888.

**Mantis** (Gr., diviner). Name given to insects of the family Mantidae (order Orthoptera), found in S. Europe and the tropics. Large and powerful, long in the body, and armed with forelegs specially adapted for seizing their prey, they vary greatly in form and colour, many of them being curiously like the leaves and flowers among which they lurk. The name praying mantis has been given to the common European species on account of its habit of resting with

its forelegs raised in a devotional attitude. The insects have always been held in superstitious awe by the Greeks, Turks, Hindus, etc.

**Mantle** (Lat. *mantellum*, napkin; cloak). Sleeveless, loose cloak worn over other clothes by either sex. The toga worn by the Romans and the peplum and chlamys of the Greeks were varieties of the mantle. In the present day a mantle forms part of the robes of state of peers and knights of various orders. See Costume; Toga.

**Mantle**. Appliance for lighting. Gas mantles use substances with a high degree of selective radiation. Chief of these are thoria and ceria, two rare metallic earths, sometimes known as thorium oxide and cerium oxide. The first gas mantle was invented by Welsbach in 1883, since when continual improvements have resulted in the small inverted mantles for domestic use and the long inverted ones for high pressure street lighting.

The physical properties of a mantle depend upon the fabric and the mixture of the oxides of thorium and cerium. Mantles are made by knitting cylinders of ramie or artificial silk fabric. These cylinders are saturated with a solution of nitrates of thorium and cerium and then dried. One end is sewn up with asbestos thread: the other is fixed by asbestos thread to a fireclay holder ring. The mantle is then burnt to convert the nitrates into oxides and finally dipped in a solution of collodion which, when allowed to dry, strengthens the mantle and enables it to be handled and transported. The collodion is burnt off after the mantle has been set in place.



Mantle of mid-Victorian fashion



Mantilla as worn by Spanish ladies

A mantle impregnated with thorium oxide only will attain a high temperature, but will not glow brightly as only a small amount of the radiation emitted is in the visible region of the spectrum. The addition of about 0.9 p.c. of cerium oxide produces a brilliant white light.

**Mantlet**. Military term applied to grooves cut above and below the gunport in tanks to allow the gun to be elevated or depressed.

**Mantling**. Term used in heraldry. It includes the robe of estate placed behind a shield of arms, the silken capes and scarves or fancy scrolls pendent from the helm or crest, and by extension the ribbons and knotted cords placed as external decorations.

Napoleon I and III had their heraldic robes powdered with golden bees, in this following the custom of the Middle Ages, when great nobles powdered both the cloak and lining with their badges.

The silken helm or crest scarf represents the scarf of authority worn in battle, or the gage of honour borne in tournaments, and is represented as tattered in strife. The foliated scroll is a degenerate form of the scarf. It is generally represented as scarlet, lined with white, or is a combination of the livery colours. In Scottish heraldry the scarf is sometimes replaced by a bunch of floating ribbons of the clan tartan. Such ribbons, but of livery colours, were used in the Middle Ages and represented as black, or alternately black and white, when the bearer was in mourning, or had taken vows to enter the religious life.

**Mantoux**, PAUL (b. 1877). French politician and educationist. Born at Paris, April 14, 1877, he became secretary of the Hautes Études Sociales in 1900. In 1906 he was appointed professor at Chaptal college, and 1910 at the Paris school of economics. A brilliant linguist, he came to London university in 1913, teaching literature and sociology, and leaving to serve in the First Great War. He was appointed director of the League of Nations political section in 1919 and left that office, 1927, in order to direct the Geneva high school of international studies, founded by him. He again became professor in Paris in 1935, staying until the outbreak of war in 1939



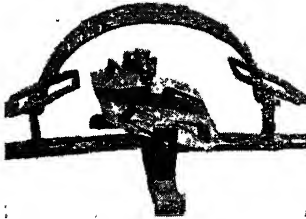
Mantling in heraldry



Mantis. Specimens of the curious insect called the praying mantis

when he became head of the British section of the French ministry of information. He published books on the industrial revolution in the 18th century and on Britain.

**Mantrap.** Device for catching trespassers. A common form had a pair of metal gripping-jaws

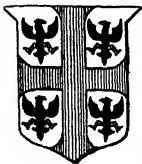


secured horizontally, when set, by a catch, which was released when a member connected to it was stepped upon. Their use is now illegal except in houses between sunset and sunrise.

**Mantras.** Miscellany of psalms, hymns, and prayers forming part of the inspired Scriptures of the Hindus. The term is applied also to a text or religious formula used by Brahmins as a charm. *See* Vedas.

**Mantua** (Ital. Mantova). Province of N. Italy, in Lombardy. It is bounded E. by Venetia and S. by Emilia. Watered by the Mincio, the Po, and the Oglio, it is low-lying but fertile, producing rice, corn, vines, and mulberry trees. Area, 903 sq. m. Pop. 402,948.

**Mantua** (Ital. Mantova). City of Italy, capital of the prov. of Mantua. It stands on the river



Mantua arms

Mincio, 100 m. by rly. E.S.E. of Milan. Surrounded by lagoons and swamps and defended by walls, Mantua, the S.W. of the Quadrilateral fortresses, the others being Leg

nago, Peschiera, and Verona, was long considered the strongest fortress in Europe. The cathedral, founded in the 12th century, has been altered from time to time, the interior having been remodelled by Giulio Romano. It is dedicated to SS. Peter and Paul. The city's finest church is that of S. Andrea. Planned by L. B. Alberti, it was begun in 1472. It has a façade of white marble, and some fine frescoes are among its interior decorations. In it Mantegna is buried.

S. Sebastian's is another noted church. The ducal palace, begun in 1302, has 500 rooms, and mural decorations by Giulio Romano, a native of the city, who also designed the Palazzo del Te and decorated it with statues and frescoes. The castle of the Gonzagas, of the 14th century, with frescoes by Mantegna, houses the archives. There are museums, an observatory and botanical gardens, and also a fine academy of arts and sciences. The industries include ironworks, breweries, tanneries, oil-mills, doll factories, printing

of which it was the centre, was one of the most important of the smaller Italian states. In 1708 Mantua was taken by the emperor Joseph I, and it remained Austrian until 1797. In 1796, during his campaign in Italy, Napoleon laid siege to the city, and after a resistance lasting for eight months it was captured in Feb., 1797. Restored to Austria in 1815, it remained Austrian until 1866, when it was made part of the new kingdom of Italy. Pop. (1936) 39,734.

The city, which lay in the part of Italy occupied by the Germans after the armistice between Italy and the Allies of Sept., 1943, was captured from them by the 5th army without serious fighting, April 25, 1945, and suffered only scattered damage. The Casa della Cervetta had been destroyed in an air raid, Aug., 1944. The cathedral and S. Andrea escaped intact; the 13th cent. church of S. Francis was almost completely, that of S. Maurice completely, destroyed.

**Mantzius, KARL** (1860-1921). Danish actor and author. Son of a famous actor, Kristian Mantzius, his early studies were in philology. He was for 30 years associated with the royal theatre, of which he was director 1909-13, and distinguished himself in some of the plays of Björnson, Ibsen, Holberg, Molière, and Shakespeare. He wrote *A History of Theatrical Art*, trans. into English by L. von Cosel, 1903-09. He died at Copenhagen, May 17, 1921.

**Manu** (Skt., man). In Hindu mythology, the first man and the father of mankind. In the Indian story of the flood his life is said to have been miraculously saved by



Mantua, Italy. Piazza Sordello, with the cathedral, left, and the façade of the ducal palace; monument in the piazza to the political martyrs of the rising in 1851. Top, vegetable market, with tower and dome of S. Andrea

a fish, supposed to be an incarnation of Brahma, which dragged him, in a ship built by him, on to the Himalayas. Here he formed a woman of various substances, and by her became the progenitor of the human race. According to tradition, this being was the originator of the Laws of Manu. The object of these was apparently to support Brahmanism against Buddhism, and the laws, though regarded as uninspired, are still considered binding upon Brahmins. The work is probably a new edition, largely interpolated, of an older work, and dates from about the Christian era. There is an Eng. trans. by G. Bühler in *Sacred Books of the East*, vol. 25, 1885. See Brahmanism.

**Manual Training.** Term formerly applied to training in various handicrafts without any definite vocational aim. The idea was to train hand and eye as part of the general education of the faculties. Manual instruction was defined in the Technical Instruction Act, 1889, as "instruction in the use of tools, processes of agriculture, and modelling in clay, wood, or other material." Since then educationists have realized that much more is desirable, and much more than hand and eye can be developed through the teaching and practice of handicrafts. In consequence the term manual training has been generally discarded in favour of practical instruction (included in the Education Act, 1918) or crafts.

This practical aspect of education has been fully recognized in the provision of it for children of all ages, for adolescents, and for adults as a means of correlating and integrating the work done in separate subjects, e.g. mathematics, history, geography, science, and art. It has been advocated for the development of self-control, self-respect, and self-help, for stimulating the flagging interest of pupils, and for fostering interest in hobbies, a point of special importance to the millions of workers in repetitive processes.

Practical instruction varies in different schools according to the locality, the qualifications of the staff, and their idiosyncrasies. In some secondary schools boys will still have only instruction in wood-work and perhaps metalwork; in others they will design individually everything they make, and prepare, e.g. the scenery for school plays, or devise realistic scenes to illustrate geography, history, or scientific projects. Girls in some

school may have only rudimentary needlework and cookery; in another, the teaching of art will be applied to crafts or house furnishing; in another they will pursue a comprehensive housewifery course. Recent experiments suggest that the extreme differentiation of the craft courses of boys and girls may not be desirable, particularly in regard to crafts associated with the home.

**Manul.** Species of wild cat (*Felis manul*). It has a very broad, flattened head, and long fur varying in colour from grey to buff, with a few dark stripes. It is found among the hills in the wilder districts of Tibet and Mongolia, and feeds on small rodents.

**Manumission** (Lat. *manus*, hand; *mittere*, send). The freeing of a slave. In Roman law a slave might be freed either formally or informally. The formal methods were (1) *vindicta* or a fictitious law suit; (2) *censu*—by enrolment on the census; (3) *testamento*—by will. The informal methods included declaring him free before witnesses or conferring freedom on him by letter.

**Manure.** Material added to soil to increase its fertility. It is used to promote the growth of crops by supplying plant food, and by generally improving the soil as a medium for plant growth. The oldest kind is farmyard manure. Varro in 40 B.C., and Columella in A.D. 40, both describe in detail how it should be prepared and applied, and their instructions were generally accepted until the beginning of the 19th century. Farmyard manure acts in both the ways indicated above, and if it could be obtained in indefinite quantities farmers would ask for little else, but the amount is strictly limited. For many years, therefore, chemists have been confronted with the necessity of finding substitutes.

**NITROGEN COMPOUNDS.** These are perhaps the most effective of all added nutrients under ordinary British soil conditions, and of all possible nitrogen compounds nitrates are the best. For technical reasons only four nitrates are possible in practice, viz. those of sodium, calcium, potassium, and ammonium—and of these, sodium nitrate has proved the most convenient. It comes from Chile, where it forms great surface deposits; its origin is not known with certainty, but it was probably deposited from inland seas which have dried up; owing to its ready solubility in water it survives only in rainless regions.

Enormous amounts are used in agriculture and also for the manufacture of explosives, but supplies are said to be sufficient for over 300 years even at the present rate of consumption. Calcium nitrate, made artificially in large quantities in Norway, is an equally good fertiliser.

Ammonium sulphate is nearly as effective as sodium nitrate. It is produced from coal during the making of gas or coke, and before the First Great War was exported in large quantities from Great Britain. The ammonia can be taken up by plants, but normally it is first oxidised to a nitrate in the soil by micro-organisms. This process goes on without appreciable loss of nitrogen, but ammonium salts are not as speedy in their action as nitrates. Calcium cyanamide or nitrolim is artificially produced on a large scale in Sweden, Italy, Canada, and elsewhere, and easily gives rise to ammonia in the soil.

Many organic substances contain nitrogen in complex combinations which, however, speedily decompose in the soil, yielding ammonia, which then oxidises to nitrates. Usually a certain loss of nitrogen occurs during the process, so that these substances are not as effective as nitrate of soda or sulphate of ammonia. As they offer other advantages to the cultivator, they may command a higher market price per unit of nitrogen. The substances include bone, meat meal, dried blood, and other products from slaughter-houses, fish meals, and also residues from certain crushed oil seeds, shoddy, wool wastes, etc.

Nitrogenous fertilisers are of value on almost all soils and for almost all crops; they increase the weight of leaves, stems, and grain. The increased yield for the first increment of fertilisers is generally proportional to the quantity applied, but later increments produce smaller increases in accordance with the law of diminishing returns, and they may cause undesirable secondary effects, such as increased susceptibility to disease. Calcium cyanamide, calcium nitrate, and ammonia are produced in enormous quantities from the air, and there is no likelihood of any shortage of nitrogenous fertilisers ever arising.

**PHOSPHATIC FERTILISERS.** From time immemorial farmers have recognized the utility of bones as manure. When chemistry was applied to agriculture, it was realized that one effective constituent was

the phosphate, and that better results might be obtained by rendering this soluble by treatment with sulphuric acid. There is no longer a sufficiency of bone, but enormous deposits of calcium phosphate have been discovered. This rock phosphate is acted upon by sulphuric acid, giving a mixture of calcium mono-phosphate and calcium sulphate, which, however, is not separated into its components, but sold as superphosphate. This process was first worked out by Lawes, and it proved the foundation of a great artificial fertiliser industry, which for many years remained largely in British hands. Superphosphate is especially effective in promoting root formation, and it is largely used on the so-called root crops—swedes, turnips, etc.—and on potatoes. It also promotes early ripening of grain, and therefore is used for barley, which must be cut dead ripe, and for wheat and oats in the northern counties of England, and in Scotland, where harvest is apt to be delayed by bad weather.

Another important source of phosphate is basic slag. The richest and best is obtained from the Bessemer converter, but this is now largely displaced by the open hearth system, which gives a much poorer slag. Basic slag is alkaline and is especially well suited for the great grass areas of boulder and lias clay in the midland and northern counties of England.

The following table shows the increased yields that may reasonably be expected from the application of one cwt. of sulphate of ammonia or nitrate of soda, or one cwt. of superphosphate :

	1 cwt. sulphate of ammonia or 1½ cwt. nitrolim	1 cwt. superphosphate or high grade basic slag
Wheat, grain .. .. .	4½ bush.	0-1½ bush.
"   straw .. .. .	5 cwt.	1-5 cwt.
Barley, grain .. .. .	6½ bush.	2-3 bush.
"   straw .. .. .	6½ cwt.	0-2 cwt.
Oats, grain .. .. .	7 bush.	1-3½ bush.
"   straw .. .. .	6 cwt.	0-2 cwt.
Hay .. .. .	8-10 "	
Mangolds .. .. .	32 "	20 "
Potatoes .. .. .	20 "	10 "

Thus one cwt. of superphosphate which contains 11·8 p.c. of phosphoric oxide,  $P_2O_5$ , is about half as effective as one cwt. of sulphate of ammonia, which contains 20 p.c. of nitrogen. In practice it is customary to apply at the rate of  $\frac{3}{4}$  to 1½ cwt. of nitrate of soda or sulphate of ammonia per acre, and two to five cwt. of superphosphate or basic slag.

**POTASSIC FERTILISERS.** In the last decade of the 19th century large quantities of potassium salts were exported from Stassfurt in Germany, and proved very success-

ful on light, sandy, or peaty soils, and for crops such as mangolds, potatoes, and sugar beet, which make large quantities of sugar or starch. They are largely used in the potato-growing districts of Lincolnshire, Scotland, and Cheshire, by the mangold growers of Surrey and Norfolk, and also by the flax growers of N. Ireland. Certain waste products, such as flue dust from blast furnaces, or the rotary kilns of cement works, contain a fair amount of potash and are being exploited. Seaweed is also a possible source, as, too, is felspar. To some extent salt can economise potash in the plant. Potassic fertilisers give tone and vigour to the plant, and help it to resist diseases or other adverse circumstances.

Lime acts by improving the soil. It neutralises the acidity which often tends to accumulate; it flocculates the clay and maintains a good physical texture, and it tends to put out of action disease organisms such as finger and toe in turnips. It can be applied as quicklime at the rate of 10 cwt. to two tons per acre, or as ground limestone in double these quantities, or as chalk in still larger amounts. The use of chalk was known to the Britons, and the method of application as described by Pliny closely resembles that still used in Hertfordshire and the neighbourhood.

Farmyard manure contains all the elements of plant nutrition, and in addition its organic matter exercises important physical effects on the soil, improving the tilth and increasing the water-holding capacity. These physical effects

are largely due to the straw and the undigested food residues. Farmyard manure is applied at the rate of about 10 to 20 tons per acre.

Very much of the fertilising value of farmyard manure arises from the

sing manurial value, but none has stood the test of field trials. Liquid manure may be classed with farmyard manure. Occasionally it is used in the liquid form on permanent grass and seeds.

E. J. Russell

The cotton plant, as it has been proved, is one that well repays the use of manures. The actual cotton that is grown on the plant takes from the soil comparatively little of its fertilising ingredients, but it is quite otherwise with the seed, from which a valuable oil is obtained. The loss to the soil caused by removing the seed is best made good by the application of cotton oil cake, which is much the cheapest fertiliser that can be obtained in the United States.

The cake is used as manure, either directly or indirectly by giving it as food to the animals that are kept on the cotton fields. Of the other manures that are used in the cultivation of cotton, the most important are the offal of fisheries and abattoirs, and superphosphates made from the phosphates of South Carolina, Tennessee, and Florida. See Agriculture; Crops; Fertiliser; consult also A Student's Book on Soils and Manures, E. J. Russell, 2nd ed. 1919.

**Manuscript** (Lat. *manu scriptus*, written by hand). In the wider sense, anything written as opposed to anything graven or printed; in the narrower sense, a text written, before the general adoption of printing, on papyrus, parchment, or paper. It is very commonly abbreviated to MS., plural MSS. The name *chartae* is especially reserved for shorter public or private documents, chiefly of an official or business character, dating from the Middle Ages. The name *codex* (trunk of a tree), now applied to all old MSS. generally, was originally given to wooden tablets with a coating of wax, fastened together for writing upon. The sciences dealing with the documents and manuscripts in general are called Diplomatic and Palaeography.

The form of the manuscript depended upon the nature of the writing material. The papyrus roll-form (*volumen*) was the oldest, only one side as a rule being written upon; if both sides were used, the rolls were called *opisthographi* (written on the back). The modern book-form (*codex*) first came into general use in the 4th century of our era, when parchment had almost entirely ousted papyrus. In Rome, MSS. were as a rule taken down by several slaves at the same time from one person's dictation; this naturally led to a number of

fact that the animal takes from its food mainly the carbon which the plant does not need, while it does not retain much of the nitrogen, phosphorus, and potassium which the plant needs. The richer the diet in these constituents, therefore, the better the manure. As a rule, one ton of farmyard manure contains 9-14 lb. of nitrogen, 4-5 lb. of phosphoric oxide ( $P_2O_5$ ), and 9-15 lb. of potash ( $K_2O$ ). The method of storage on the farm, however, is often extremely wasteful. From time to time other substances are put forward as posses-

mistakes, and these were further increased by the careless copying of the monks.

In the course of excavations at Herculaneum, 1752, and in Egypt from the beginning of the 19th century, a large number of papyrus-rolls has been discovered. The Egyptian finds, mostly in Greek, throw considerable light upon the condition of the country in the time of the Ptolemies and under the empire. Greek literature has acquired valuable additions, as the mimes (farces) of Herodas, odes of Bacchylides, fragments of Menander, and Aristotle's Constitution of Athens. The most important parchment MSS. are the palimpsests (rubbed again), the writing upon which has been erased or rubbed out, so that the parchment could be used again. The original writing has in some cases been restored by the use of chemicals, and deciphered. One of the oldest of the parchment MSS. is the Codex Sinaiticus of the Bible, belonging to the 4th century, and discovered in a Sinai convent. Another famous MS. is the *codex argenteus* of the Gothic translation of the Bible by bishop Ulfilas.

In MSS. the gathering of the sheets in quires was of great importance. Each quire contained a number of sheets, generally four, folded down the middle and placed inside each other, thus making 16 pages. The middle was indicated by a string. Since pagination was not adopted till the 15th century, the test of the completeness of a MS. was the number of pages on each side of the string. The chief task in dealing with several MSS. of the same work is to investigate their mutual relations, especially in the matter of mistakes in which they agree, and to construct a genealogical table, to establish the text of the archetype, or original, from which they are derived. *See* Book; Diplomatic; Kells, Book of; Palaeography; Writing.

**Manutius**, ALDUS (1450–1515). Latinised name of the Italian scholar-printer, Aldo Manuzio or Manucci. He studied at Rome and Ferrara, and about 1490 founded a press at Venice. Here were printed the editions of the Greek, Latin, and Italian classics known as the Aldine editions (*q.v.*). He did much to spread the new learning, and was remarkable for



Aldus Manutius,  
Italian printer

his scholarship and care in securing accurate texts, beautiful compact type, and the cooperation of a band of scholars. After an absence from Venice, 1506–12, he set up his press again with his father-in-law, Andrew Asola, as partner. He died at Venice, Feb. 3, 1515, and was succeeded by his son Paulus (1512–74) and the latter's son Aldus (1547–97).

**Manx**. Word used for anything belonging to the Isle of Man, *e.g.* a Manxman or the Manx speech. A Manx cat is a variety of cat found in the island in which the tail is either absent or stunted. *See* Cat; Man, Isle of.

**Many Inventions**. Volume of short stories by Rudyard Kipling, published in 1893. It owes its title to the text from Ecclesiastes: "Lo! this only have I found, that God hath made man upright; but they have sought out many inventions." It includes some of Kipling's finest early stories, *e.g.* My Lord the Elephant, A Matter of Fact, The Disturber of Traffic, Love o' Women, The Finest Story in the World, The Record of Badalia Herodsfoot. The last-named story, an early excursion into painful realism, with a London slum as its setting, was much discussed on its first appearance.

**Manzanares**. River and town of Spain. The river, on which stands Madrid, flows S. for a course of 40 m. to join the Henares. The town is a rly. junction on the

line from Santiago to Havana (487 m.). Pop. 65,965.

**Manzanillo**. Seaport of Mexico, in the state of Colima. It stands on Manzanillo Bay, an opening of the Pacific, 38 m. by rly. W. by S. of Colima. The harbour has been rendered secure by a breakwater and sea wall, and the port is visited by steamer services. Population, estimated, 30,000.

**Manzoni**, ALESSANDRO (1785–1873). Italian writer. Born at Milan, March 7, 1785, he became the leader of the romantic and medieval reaction in Italian literature. His tragedies, *The Count of Carmagnola*, 1820, and *Adelchi*, 1822, mark an epoch in Italian drama by their adoption of Shakespearean methods, and by their bold romanticism, and his novel of 17th century Milan life, under Spanish rule, *I Promessi Sposi* (*The Betrothed*), 1825–27, established a world-wide reputation and created a school of Italian historical novelists. Later Manzoni wrote *Letters on Romanticism*, defending the romantic school. He died at Milan, May 23, 1873.



Alessandro Manzoni,  
Italian novelist

**Maori** (Polynesian, aboriginal). People of Polynesian stock in New Zealand. Numbering (1945) 98,000, mostly in N. island, they are tall, muscular, olive-brown, with straight or wavy hair, and oval faces of Caucasoid mien. They preserve traditions of the arrival from Rarotonga, about 1350, of their tribal ancestors in a fleet of six double canoes or single outriggers. The newcomers found an indigenous population, partly Papuanian, being absorbed into earlier Polynesian



Maori. Left, Maori woman carrying her child on her back. Right, an old chief

Azuer in the prov. of Ciudad Real, 27 m. E. of the city of that name. It is in the arid, elevated area of La Mancha. There is an old castle. It carries an important trade in wheat and wine. Pop. 15,900.

**Manzanillo**. City and harbour on S.E. coast of Cuba, in the prov. of Oriente. Situated at the mouth of the river Canto, it has a commodious harbour, from which sugar, lumber, tobacco, and hides are shipped. It is a rly. terminus, and has connexion with the main

immigrations, especially one from Tahiti, c. 850.

Without metals, pottery, or weaving, they practised cookery in hot-stone ovens, having brought with them the sweet potato (*kumara*) and the yam (*taro*), also, it is said, the native dog. The colder climate led to the construction of substantial rectangular timber houses, wrought with jade adzes and chisels, and the development of a virile art, especially in the carving of bargeboards, gables,

houseposts, and canoes. Personal ornament included jade amulets, *heitiki*, in the form of human embryos. Face-tattooing, of the type called *moko*, was effected by grooving elaborate designs into the flesh with sharp-edged bone adzes. This custom, reserved for the ruling class, has ceased, but women still tattoo on lips and chin. New Zealand flax was plaited by hand into shoulder-mats and waist-mats, sometimes enriched with kiwi or moa feathers. Cannibalism and infanticide formerly prevailed.

The priests, *tohunga*, controlled taboo and divination, and preserved the national chants, *karakia*. When they exercised temporal power they were called *ariki*, divine chiefs, superior to the secular headmen of the clans. Their insignia—a huia feather in the head-dress and a staff, *taiaha*—were worn by the prince of Wales at Rotorua in April, 1920, when witnessing the pantomimic dances. These comprised the warriors' *haka*, with weapons and violent movements, and the *poi*, in which women twirl between the fingers balls of dried bulrush leaves.

The communal life has been modified since contact with settlers; now nominally Christian, they are often eager for education. There are four Maoris in the house of representatives, and two in the legislative council, besides a minister representing the native race. They mix with the white population on completely equal terms, intermarry without adverse comment, and take their place side by side in the industry, commerce, and government. The fact that the Maori pop. has risen from 48,000 in 1901 to 98,000 in 1945 is an indication of healthy progress.

Maoris fought with distinction in the Second Great War. The famous New Zealand div. of 8th army included a Maori battalion, and in all over 6,000 Maoris served overseas. Recruiting among them was voluntary; none the less nearly 40 per cent. of Maoris of military age joined the forces. A Maori officer, 2nd Lieut. Moana-Nui-a-Kiwa Ngarimu, was awarded a posthumous V.C. for gallantry near El Hamma, Tunisia, March 26, 1943. See New Zealand; consult also The Old New Zealand, F. E. Maning, 1863; Maori and Polynesian, J. M. Brown, 1907; Hawaiki, S. P. Smith, 3rd ed. 1910; The Maoris of New Zealand, J. Cowan, 1910; The Maori, Yesterday and Today, J. Cowan, 1930; Sketches from Maoriland, H. Grieve, 1939.

**Maori Wars.** British campaigns against the Maoris. By the treaty of Waitangi in 1840, Great Britain assumed the sovereignty of New Zealand, guaranteeing the Maoris possession of their lands and fisheries. Friction soon arose, however, between the natives and the colonists over the ownership of the land, and resulted in the first Maori War, 1843–47. It consisted of skirmishes and ambushes, and was finally closed by the definite settlement of the boundaries.

The second war, due to racial hatred, was waged in a desultory fashion during 1861–71. There were few definite engagements, but

despite their bad leadership and ignorance of European tactics, the Maoris proved themselves stubborn fighters. The war increased in bitterness during 1863–64, and severe engagements took place, in which both sides lost heavily, but largely owing to the faulty strategy of General Duncan Cameron the struggle dragged on. The massacre of the settlers at Poverty Bay and Mohaka, 1868, aroused further bitter fighting, but the natives finally submitted in 1870, and by the following year all trouble had ended. See New Zealand.

**Mao Tse-tung** (b. 1894). Chinese communist leader. See N.V.

## MAPS AND MAP-MAKING

R. A. Skelton, Superintendent of the Map Room, British Museum

The history of map-making is here followed by an explanation of how contemporary maps are made and of the way in which they can be used. Related articles include those on Projection and Surveying. See also noted map-makers, e.g. Mercator; Ptolemy; Saxton.

A map is a plane representation of the earth's surface or of a part of it. The data of many human activities—scientific, social, economic, and political—can be concisely plotted on maps which show their geographical extension or distribution. A collection of maps is called an atlas, a term first introduced by Mercator. For the methods by which the curved surface of the earth is represented, or projected, on the flat surface of a map see Projection. The only wholly satisfactory solution of mapping problems is the globe.

**HISTORY OF CARTOGRAPHY.** The basic problems in map-making are the determination of the relative positions of places and the measurement of distances. The history of cartography describes the progressive solution of these problems and the assimilation of new geographical knowledge.

### Oldest Known Maps

The oldest known maps served the needs of the land surveyor and the navigator in the earliest civilizations of the Euphrates valley and the Mediterranean basin. The spherical shape of the earth was a familiar idea to the Greeks by the 6th century B.C.; and they constructed a mathematical framework for their world map by making an approximate calculation of the size of the earth, by laying down the network of parallels and meridians, and by devising instrumental methods for the determination of latitude. In his *Geographia* (c. A.D. 160) the astronomer Ptolemy of Alexandria compiled, from travellers' reports and astronomical observations, tables

of latitude and longitude for many places, accompanied by maps.

Ptolemy's work was unknown to medieval Europe, although it survived among the Arabs; and the diagrammatic world maps of the Middle Ages (e.g. the Hereford map of c. 1280) found their main sources in theological tradition. From the so-called "portolan" charts of the Mediterranean and Atlantic shores there developed another series of decorative manuscript world maps which showed the discoveries of Marco Polo and later travellers.

### Improvements on Ptolemy

Modern geography dates from the 15th century, with the revival of Ptolemy, a Latin translation of whose *Geographia*, made in 1410, was widely diffused after the invention of printing; and with the earliest of the great discoveries, notably of America and of the sea route to India. The outlines of Ptolemy's world map, which depicted three continents and an Indian Ocean enclosed by land, were further modified by Magellan's navigation of the western sea route into the Pacific. The maps of the 16th century, in which Spain, Italy, and Holland in turn took the lead, were continuously corrected by information from new discoveries, by study of the mathematical principles of cartography, and by improved methods of survey and observation. The scientific mapping of provinces and countries began. Among the earliest of such surveys is that of the English counties by Christopher Saxton (pub. 1574–79). The leading cartographers of this period were Gerard





Map of the world according to Ptolemy, about A.D. 160. Lines of latitude and longitude were added later  
By courtesy of H. F. Tozer, *History of Ancient Geography*, Cambridge University Press

Mercator and Abraham Ortelius; and the Dutch remained supreme in this field during the 17th century.

More accurate calculations of the earth's shape and size, made chiefly by French geographers, improved the outlines of the world map in the early 18th century, and map-makers of this period (especially J. B. B. d'Anville) made more critical use of their material and introduced better methods of representation. The problem of determining longitude was at length solved by John Harrison's invention of a reliable timekeeper or chronometer. With the development of precision instruments (e.g. Ramsden's theodolite) official trigonometrical surveys of countries were undertaken, the triangulation of England being begun in 1784. This work has been continued in the 19th and 20th centuries, which have also seen the development of many special types of map required by various branches of science.

**TYPES OF MAP.** Maps are commonly classified according to their scale and their purpose. The scale, or proportion between a given linear distance on a map and the corresponding distance on the ground, is expressed either in units of length or as a representative fraction (R.F.) with a numerator of 1; thus a scale of 1 in. to the mile may also be stated as 1/63,360, (there being 63,360 ins. in a mile), indicating that each linear unit on the map represents 63,360 such units on the ground. The smaller

the denominator of the R.F., therefore, the larger the scale.

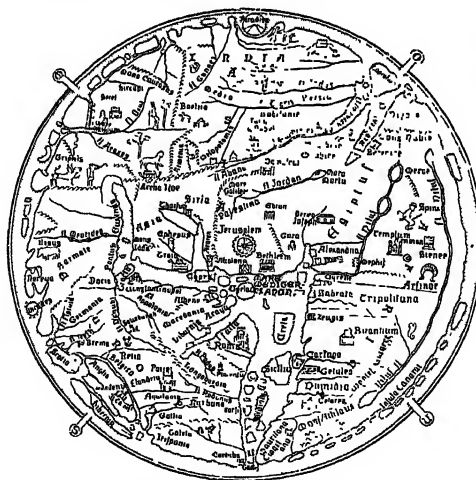
The amount of legible detail which a map can show depends primarily on its scale and on the clarity of the conventional signs, or symbols, used. Land maps can be classed, according to scale,

out undue distortion; and (c) general or atlas maps, on the smallest scales.

Among the more important general and topographical maps are the International Map, on a scale of 1/1,000,000 (1/M), and the national surveys of many countries.

The British Ordnance Survey publishes topographical maps on scales of  $\frac{1}{4}$  in.,  $\frac{1}{2}$  in., 1 in., and 2 ins. to the mile, covering the whole country, besides plans on 6 ins. and 25 ins. to the mile and town plans on 5 ft. and 10 ft. to the mile.

Nautical charts give little or no land detail but show all marine features which have significance for navigation, e.g. sea depths (within soundings), tides and currents, navigation marks.



Hereford Map, compiled about 1280

as (a) plans, on a scale (not less than 1/10,000 or about 6 ins. to the mile) large enough to define separate buildings and plots of land and to serve the needs of cadastral survey and local administration; (b) topographical maps, on smaller scales but showing the outline of natural and artificial features with-

Special maps illustrate many aspects of physical geography (e.g. meteorological, geological, botanical maps) and of human geography (e.g. population maps, racial, linguistic and political maps, road and railway maps, land utilisation maps, and maps to indicate distribution of products etc.).

**MAP-MAKING: (1) Plane Survey.** The maker of a map on any scale works from the whole to the parts and begins by constructing a rigid geometrical framework of lines and angles to which he can relate the manifold and unsystematic details of the ground. This survey, an essential prelude to the construction of a map, consists of the accurate measurement of distances and directions (or angles). The simpler methods of measuring distance are pacing, the use of a wheel of known

circumference, calculation from the time and rate of movement, and the surveyor's chain. Angles can be measured by compass, plane-table, or theodolite. The plane-table is a drawing-board on a tripod, on which is placed a movable ruler (or alidade) fitted with sights; the theodolite is a telescope which, as it rotates in bearing and elevation, measures both horizontal and vertical angles.

In making large-scale plans of small areas both distance and direction are commonly found from measurements of distance alone. For maps on smaller scales, representing a larger part of the earth's surface, the precise latitude and longitude of a number of points should be known; and one of two methods may be used for the survey and plotting of intermediate (and perhaps inaccessible) points. These methods are (a) traverse, (b) triangulation; each involves measurements of direction or angle.

A traverse is a connected series of lines, or "legs," whose direction and length are known. A traveller can, without leaving his route, determine the bearing and approximate position of visible features on either side of it by prismatic compass or theodolite; or the details can be graphically plotted by plane-table. This method is appropriate in difficult country.

In triangulation the whole area to be mapped is covered with a network of triangles by which the position of a number of points is precisely fixed. A base line (Fig. 1) A B is accurately measured: the surveyor then observes with the theodolite the angles made at each end of this base between it and his line of sight to conspicuous landmarks (in the diagram, C, D). By plane trigonometry he can then calculate the size of the third

angle and the length of the other two sides of the resulting triangle. In a major survey the triangles

directly depending on the base line are very large, and the base and angles measured with the greatest accuracy; from this primary triangulation are developed a number of secondary and tertiary triangles. The accuracy of the whole system depends on the precision with which the primary base is measured.

Triangulation can be carried out graphically direct on the plane table without actual

measurement or calculation of angles. The base line is measured and drawn to a convenient scale on the plane table, which is then set up, correctly oriented, at each end of the base in turn; the other two sides of the triangle are drawn along the lines of sight. After the positions of "ruling (or trigonometrical) points" have been determined by triangulation, the horizontal or plane survey is completed by sketching in other detail to be shown on the map.

In addition to the methods described above, photography is used in various ways by the surveyor, and survey from the air is increasingly used, particularly in remote or difficult country. (See Air Photography.)

(2) *Heights.* In the survey for a map which is to represent surface relief, the height of many points above mean sea level must be determined and the slopes between them defined.

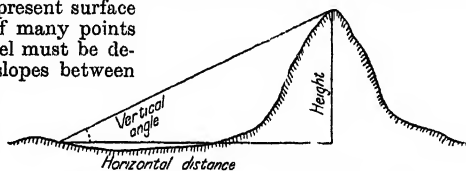
The commonest methods of ascertaining the difference of height between points are:

(a) by the aneroid barometer and other instruments for recording changes in atmospheric pressure and therefore in height; (b) by clinometer or theodolite, i.e. sighting instruments which measure vertical angles; (c) by "levelling." The first, and least accurate, method is convenient for rapid travel. In the second method the angle of sight and the horizontal distance provide data for the solution of a right-angled triangle (as in Fig. 2), and the calculation of the vertical height (i.e. the horizontal distance multiplied by the tangent of the vertical angle). In levelling, a graduated staff and a level fitted with a sight make it

possible to measure small differences of height with great precision. By these methods the surveyor plots "spot heights"; the level of the intervening ground is determined by interpolation or by measurement (with a clinometer) of the average gradient or angle of slope. The outlines of the land forms are completed by sketching in horizontal "form lines" at selected levels.

There are several ways in which the information thus obtained from survey can be so drawn on the map that the relief of the area is clearly conveyed to the reader's eye poised, as it were, vertically above the landscape. A series of contour lines (the most exact method) can be drawn at fixed vertical intervals, e.g. 50 ft. or 100 ft., joining all points which have the same altitude above sea level. The space between contours can be tinted in different graduated colours, usually from lighter shades at sea level to darker at greater heights; this is called layer colouring.

Other conventions for representing relief are less precise but more graphic. Form lines are roughly drawn, unsurveyed contours. "Hachures" are lines drawn down the slope, closer together where the gradient is steep, wider apart where it is gentle. Hills can be shaded as if light were thrown on them from an angle (usually the N.W. corner of the map). All these modes of representing relief can be found in



Map. Fig. 2. Measurement of heights

the later editions of the Ordnance Survey 1 in.-to-a-mile map of England.

(3) *Drawing the Map.* From the material collected in the field survey, the draughtsman compiles the map. After the scale and size of sheet have been chosen, he draws the outlines, using appropriate conventional signs and colours, usually blue for water features, green for woods, red or brown for contour lines. The names are inserted in a size adapted to the character and importance of the features which they designate. The sheet is then, if necessary, reduced by photography or by hand to correct size.

**MAP READING.** The first characteristics to be appreciated in reading a map are its scale and its orientation. Scale, direction of N., and local magnetic variation, with much other useful information, are usually given in the margin, or in a corner. Where the scale is small and the area represented large, the projection of the map should be known, for the linear scale will not be the same in every part of it; the scale given is usually that at the equator or on the central meridian. The scale being known, linear distances and areas can be measured on the map. The measurement of areas is important in using cadastral plans and some types of distribution map, e.g. population maps; otherwise the reading of special maps requires little more than an intelligent understanding of the map's intention and limitations and of the symbols used.

Topographical maps show the distribution of land and water, the physical formation and principal surface features, and the evidences of human settlement. The reading of such maps involves, first, the understanding of the conventional signs, a table of which is provided by a "characteristic sheet" in the margin, and, secondly, the interpretation of their appearance and juxtaposition on the map. It is essential to remember that the many detached symbols to be found on a map depict a *continuous* land surface which must be visualised.

The geographical significance of quite small vertical differences makes the correct reading of relief in topographical maps important. If the map-drawing is sufficiently graphic, a general idea of the relief of an area can be formed by rapid inspection of the map; but exact visualisation of the land forms depicted and of the "run" of the country demands closer examination.

The following clues will help in the reading of contoured maps:

(a) Level ground is contourless; but the absence of contours does not necessarily denote either quite level ground or a regular slope.

(b) The closer the contours, the steeper the slope.

(c) From the drainage system, i.e. the position of watersheds and river valleys, can be determined the direction of slopes.

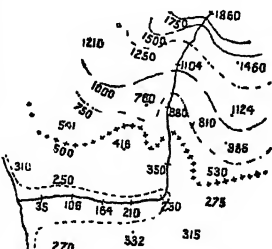
(d) V-shapes in contours pointing downhill represent projecting ridges or spurs; pointing uphill, valleys. A river will cut through the points of V-shaped contours.

(e) Hills and mts. are represented by contours forming a closed figure.

Such descriptive study of the map leads to analysis of the significant physical character of landscape and of the human activities which are controlled by it. The interpretation of topographical maps is therefore an important aspect of geographical studies.

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**Map OR MAPES, WALTER** (c. 1140-c. 1210). Medieval Latin author of the Welsh *Marches*. Probably a native of Herefordshire, of Welsh origin, he studied in Paris and was present at the Lateran council in Rome, 1179. Successively chancellor of Lincoln and archdeacon of Oxford, he was also clerk of the court to Henry II, and acted as justice itinerant. He wrote *De Nugis Curialium*—i.e. courtiers' gossip, a miscellany of historical and legendary anecdotes, containing some curious folklore, and also details of his own life. He was probably the author of a French poem on Lancelot of the Lake, the original of the prose romance of that name, and some critics believe he had a great share in shaping the legends of the Holy Grail and the death of Arthur. Some MSS. also attribute to Map, though doubtfully, the authorship of a remarkable cycle of satirical Latin poems on the vices of the



Map-making. Diagram showing how contours are drawn from spot heights

clergy, celebrating an imaginary Bishop Golias or Goliath.

**Maple** (*Acer*). Genus of trees of the family *Aceraceae*. Natives of Europe, Asia, and N. America, they have opposite, undivided leaves and greenish or red flowers, succeeded by a pair of conspicuous "keys," each consisting of a seed

and a wing. They produce useful timber, and the sap is rich in sugar. Several of the American species are



Maple. Common field maple in full leaf

systematically tapped just before spring, when the sap is ascending and yield great quantities of maple-sugar. The species chiefly yielding sugar are *A. saccharinum* and *A. rubrum*. The sycamore or great maple of Europe and W. Asia is *A. pseudoplatanus*; the common field maple of the same countries is *A. campestre*. Many species are grown in European gardens for the sake of the rich autumnal tints of their foliage. See *Aceraceae*. The maple leaf is the national emblem of the dominion of Canada.

**Maple, Sir JOHN BLUNDELL** (1845-1903). British business man, born March 1, 1845. His father kept a furniture shop in London. In this the son joined, and under his enterprising management the business grew enormously until Maple's, in Tottenham Court Road, became a household word for furniture and kindred goods. As a Conservative Maple entered the house of commons for Dulwich in 1887. He was knighted in 1892 and made a baronet in 1897, but left no sons when he died, Nov. 24, 1903. His charities included the rebuilding of University College Hospital, London.



Sir J. Blundell Maple, British man of business

**Mappin Terraces.** Section of the London zoological gardens. First opened to the public in 1913, they were improved after the First Great War by the addition of hills of concrete. The terraces



Mappin Terraces. Feature of the London Zoological Gardens, where visitors can study the exhibits without the interception of bars. The gift of John Newton Mappin, the terraces were opened in 1913

occupy a quadrant-shaped area, in which the animals are seen in tiers. Species of antelope are at the top, bears occupy the middle enclosures, and waterfowl are at the bottom. There are no bars between the exhibits and the on-lookers, a deep ditch keeping dangerous beasts within bounds.

**Maqui** (*Aristotelia macqui*). Evergreen shrub of the family Elaeocarpaceae. It is a native of Chile. It has oblong, toothed leaves and small greenish flowers, followed by small acid berries, at first dark purple, then black, from which is made a wine used as a cure for malignant fever. The wood makes musical instruments, and the tough bark yields strings.

**Maquis** (Fr. from Ital. *macchia*, thicket). Name given to wild, scrub covered areas of Corsica which have frequently served as shelter for bandits. The young men who took to the woods and mountains in Haute-Savoie and elsewhere to avoid being conscripted by the enemy for labour or armed service after the Germans overran formerly unoccupied France in Nov., 1942, called themselves men of the maquis, and under that name formed themselves into resistance groups. Belgians similarly sheltering in the Ardennes (among whom was Prince Charles, Count of Flanders, who

became regent of Belgium in Sept., 1944) also adopted the name. See Resistance Movement.

**Mar**, EARL OF. Scottish title held by the family of Erskine. Mar was one of the ancient divisions of Scotland, comprising most of the S. half of what is now Aberdeenshire. From the



Maqui. Foliage and flowers of the Chilean shrub. Inset, left, flower; right, fruit

12th cent. it was ruled by an earl, who was later one of the seven earls of Scotland. Little is known of the early earls of Mar. In 1377 Thomas, 13th earl, died childless. His sister Margaret, who inherited, married William, earl of Douglas, and their daughter Isabel on her marriage with Alexander Stewart

brought him the title earl of Mar. She died childless in 1407, he in 1435; and the title was adjudged in 1457 to have reverted to the crown in the person of James II of Scotland. He granted it to his son John who died unmarried in 1479. It was afterwards given to other members of the royal family.

In 1565 the earldom was successfully claimed by John, 6th Lord Erskine (d. 1572), as a descendant of one of the early earls, and he is known as the 1st or 6th earl, this double numbering being retained for a time by the succeeding earls. The lands formerly attached to the title, which had been alienated, were recovered by John, the 2nd or 7th earl. John, the 6th or 11th earl, whom his enemies nicknamed Bobbing John, attainted for his share in the rising of 1715, was deprived of the earldom, the Old Pretender, however, making him duke of Mar.

The earldom was restored to his grandson John Francis Erskine in 1824 by Act of parliament. The new earl's grandson succeeded him and succeeded also to the earldom of Kellie (created 1619) by a decision of 1835. On his death, the earldom of Mar was the subject of protracted dispute; a cousin of the late earl inherited without question the earldom of Kellie, and claimed the earldom of Mar, to which there was a rival claimant through the female line in the person of a nephew of the late earl's named John Francis Erskine Goodeve. The title was granted in 1875 to the Lord Kellie, but with precedence only from 1565. This decision was confirmed by Lord Selborne and the lord chancellor in 1877; but was not accepted by Goodeve, who continued to call himself earl of Mar and in 1885 secured, after prolonged legal proceedings, the passage of an Act "restoring" to him the original earldom. He became the 33rd earl of Mar, with precedence from 1404, while his kinsman retained the title earl of Mar and Kellie. The earl of Mar is the premier earl of Scotland; his eldest son is known as Lord Garioch. The earl of Mar and Kellie is also Viscount Fentoun, premier viscount of Scotland, and hereditary keeper of Stirling Castle; his eldest son is Lord Erskine.

**Mar**, SERRO DO (Port., mt chain of the sea). Range of coastal mts. of S.E. Brazil. It is in reality the scarped edge of the S. Brazilian plateau, whence many streams flow to the Parana or Uruguay down the long inland slope. Near

Rio de Janeiro its peaks attain an alt. of 8,000 ft. to 7,000 ft.

**Marabou** (*Leptoptilos crumeniferus*). Species of stork found in Central Africa. It is of large size and ugly appearance, with almost bare head and a pendulous pouch in front of the throat. The marabou is allied to the adjutant stork (*g.v.*).

**Marabouts.** Class of Mahomedan enthusiasts or devotees among the Berbers of N. Africa. They lead public worship in the mosques, profess to work miracles and prophesy, and are revered as saints. In the 11th and 12th centuries, during the Almoravid dynasty, named after them, they exercised great power in Spain and Morocco. Their temporal power has long since disappeared, but in the 19th century they were the chief opponents of French influence in Algeria. The word is also applied to a shrine at the tomb of a marabout. See Mahomedanism illus. page 5418.

**Maracaibo.** Lake in Venezuela. It covers over 5,000 sq. m. and is in reality an inland bay joined to the sea by four separate channels, the largest of which is 8 m. wide and 34 m. long. The lake is a quadrangle about 130 m. long and over 50 m. wide. It is navigable for shallow-draught vessels. Oil is obtained from its bed and basin.

**Maracaibo.** Seaport of Venezuela and capital of the state of Zulia. It stands on the W. shore of a strait leading from the gulf to the lake of Maracaibo, 400 m. W. of Caracas. Although its harbour is small and difficult of access between Oct. and April, it is the second seaport of the republic and a transit port for E. Colombia. It has been completely modernised, and miles of new streets have been built. The climate is damp and hot, with frequent thunderstorms. The chief exports are coffee, cocoa, sugar, rubber, dye-woods, timber, hides, ores, quinine, etc. It has also become the centre of the great oil industry, producing 340,000,000 barrels annually. The sugar plantations, formerly flourishing, have declined in production, but several new sugar centres are being established in the vicinity. The manufactures in-

clude candles, soap, hats, and boots. Pop. 110,010.

**Maracaibo, GULF OF.** Large opening of the Caribbean Sea. In N.W. Venezuela, it is connected on the S. with Lake Maracaibo. Also known as the Gulf of Venezuela, its length is 75 m. and its extreme width about 150 m. It is bounded W. by the Goajira peninsula and E. by that of Paraguaná, on which are two oil refineries. It was discovered in 1499 by the Spanish navigator Ojeda, who, having found houses built on piles, named the dist. Venezuela or Little Venice.

**Maracay.** City of Venezuela. The capital of the state of Aragua, it is connected by a good motor road with Caracas, to which there is also a daily air service. Besides coffee and cacao, the main industries are cattle raising and dairy farming. Pop. 29,250.

**Marachesti.** Town of Rumania, in Moldavia. It is 12 m. N. of Focsani, and is a junction for the rly. serving the Sereth valley.

A battle between the Rumanians and Russians on the one side and the Austro-Germans on the other, was fought near here in 1917. After the defeat and disintegration of the Russians in Galicia, the Germans, under Mackensen, began an attack on the line of the Sereth, which was held by Russian and Rumanian forces. On Aug. 6 Mackensen launched a heavy assault on the Russians N. of Focsani. For the next two days Russians and Rumanians combined in a sharp counter-attack

which checked Mackensen's advance, but did not prevent him from crossing the Susitsa, a W. tributary of the Sereth, capturing Panciu, and getting near the Marachesti junction rly. On Aug. 12 a great battle began to develop in the neighbourhood of Marachesti, but Mackensen was unable to break the Russo-Rumanian line. But on Aug. 28, Mackensen attacked positions held by Russian troops, who, infected with Bolshevism, retired in disorder. Rumanian forces, however, were rushed up, and on Aug. 29 put an end to his further advance. The battle of Marachesti was the greatest battle fought by the Rumanians in the First Great War, and it ended in their complete defeat of Mackensen's tremendous effort to conquer Moldavia. See Rumania.

**Maragha.** City of Persia, in the prov. of Azerbaijan. It stands in a cultivated plain, alt. over 5,000 ft., 20 m. E. of the S. end of Lake Urmia and 50 m. S. of Tabriz. It was the capital of Hulaku Khan, who founded an observatory near by, rendered famous by the work of Nasr-ed-din. A fine, almost transparent marble is quarried, and wine and fruit are exported. There are rock temples in the vicinity. Pop. 15,300.

**Marah** (Heb., bitterness). Place in the wilderness of Shur, where the Israelites found the water bitter, Ex. 15, v. 23; Num. 33, vv. 8, 9. This was perhaps at Ain Suweirah, where the springs are still impregnated with natron. The difficulty was overcome by steeping the leaves of a certain thorn in the water—a very simple method still successfully employed in the district.

**Marajo** or **JOHANNES.** Large, low-lying island of N. Brazil. It is formed by the estuaries of the Amazon and Tocantins and their connecting arms. Swampy and liable to inundation, the W. part bears forests of rubber-yielding trees, and is visited in the dry season by rubber gatherers and hunters.

There are some small settlements on the coast, and the island is intersected by the rivers Mapua and Anajaz. Its length is about 170 m. and its width 130 m.



Marabou. Central African member of the stork family (Ciconiidae)



Maracaibo. The Plaza Baralt in this seaport town of Venezuela, capital of the state of Zulia

**Marbot**, JEAN BAPTISTE ANTOINE MARCELLIN, BARON DE (1782-1854). French soldier. The son of a general, he was born in Corrèze, Aug. 18, 1782. In 1799 he joined the army and soon saw a good deal of service, and became a general in 1814, having won a reputation for leadership in Spain and Russia. He returned to France from an exile in 1819 and, again in the army, served in Algeria, appearing also in politics under Louis Philippe. He died Nov. 16, 1854. Marbot is chiefly known for his *Memoirs*, of which there is an English trans. by A. J. Butler, 1892. They give a fascinating account of the Napoleonic campaigns.

**Marburg**. Town of W. Germany, in the *Land* of Hesse. Situated on a bend of the river Lahn, 19 m. N. of Gressen, surrounded by

the Hessian rulers. It suffered severely during the Thirty Years' War and the Seven Years' War, and became a part of Prussia in 1866. Tobacco, pottery, and wallpaper are normally produced. Taken by armour of the U.S. 1st army, March 28, 1945, it lay within the U.S. zone of occupation after the Second Great War, in the state of greater Hesse. Pop. (1935) 28,439.

**Marcasite**. Sulphide of iron,  $\text{FeS}_2$ . It is of a metallic bronze-yellow colour, and has the same chemical composition as pyrites; but marcasite crystallises as tabular or pyramidal orthorhombic crystals, whereas pyrites is cubic. Marcasite is found in coals, clays, and other sedimentary rocks as nodules, incrustations, and irregular masses. Jewelry is made of cut and polished marcasite. The mineral forms a source of sulphur



Marburg arms

and is used in the manufacture of sulphuric acid and ferrous sulphate.

**Marcellus**, MARCUS CLAUDIUS (c. 268-208 B.C.). Roman soldier. He was five times consul and one of the most successful generals during the second Punic War. His greatest service was the capture of Syracuse after a siege of two years, in 212 B.C. He was slain in a cavalry skirmish near Venusia.

**Marcellus**, MARCUS CLAUDIUS (43-23 B.C.). Nephew and adopted son of the Roman emperor Augustus, and husband of his daughter Julia. He was destined to be the successor of Augustus, and his early death was deeply mourned, cf. Virgil's lines (*Aeneid*, book vi, lines 861-887).



M. Claudius Marcellus  
From a bust

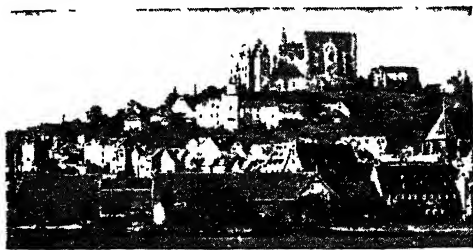
**March**. Third month of the Christian calendar: The first month of the Roman calendar, it was named after Mars, originally the Italian god of the year, especially of the spring. The Anglo-Saxons called it *Lencten-monath* (lengthening month), from the lengthening of the days. From *lencten* comes the word *Lent*. March remained the first month in France until 1564, in Scotland until 1599, and until 1752 in England, where the legal year began on March 25. In England and Scotland the last three days of March were long considered unlucky. See *Calendar*.

**March**. Music designed to assist the marching of soldiers, or processions. Of military marches there are several types for the infantry, including the slow march, for funerals and other ceremonial occasions; the ordinary parade march; the quick march; and the double. Processional marches range from the simple conceptions considered sufficient in the operas of Lully to such majestic creations as Beethoven's *Marche Funèbre* in his Third Symphony, and Wagner's *Siegfried's Funeral March*. March music is usually in 2 or 4 time, but many examples of quick marches are in 6/8 time.

**March**. Market town and urban dist. of Cambridgeshire, England. It is 30 m. N. of Cambridge and 14 m. E. of Peterborough, in the fen district, and has an important rly. junction and the Whitmoor marshalling yards (see diagram pp. 5542-43), with their 40 radiating sidings. The chief industries are engineering and machinery works. Market day, Wed. Pop. 13,000.

**March** or **MORAVA**. Tributary of the Danube, principal river of Moravia, Czecho-Slovakia. It rises in the Sudetic range and flows mainly S. to join the parent stream just W. of Bratislava (Pressburg). The upper course drains about 80 p.c. of Moravia, and the valley forms a wide trough between the Carpathians and the plateau of Bohemia. The lower course was at one time the frontier between Austria and Hungary; it later divided Austria from Slovakia. Its length is 210 m. Part of the river valley is known as the Marchfeld, and has been the scene of many battles.

**March**, EARL OF. Title borne both in England and Scotland by nobles, originally because they had charge of the marches, or the lands which lay around the boundaries between England and Wales or England and Scotland. In England the family of Mortimer pro-



Marburg, Germany. General view of the town and castle

wooded hills and peaks, it is an old and romantic town whose main glory is the church of S. Elizabeth, an outstanding early Gothic building (1235-83) with two towers 226 ft. in height. It contains the tomb of S. Elizabeth of Thuringia and a beautiful Gothic altar. S. Mary's (13th-14th century), the Catholic church (1482), the university church (14th century), the castle on the Schlossberg (1288-1493), the German house (1400), and the town hall (1525) are also buildings of note.

Marburg university was founded in 1527 by Philip of Hesse as a centre of Protestant teaching, but the buildings are modern. It had normally about 200 professors and lecturers and up to 5,000 students. It is closely connected with the history of the Reformation, for there in 1529 Luther's and Zwingli's Marburg religious colloquy was held (see *Lutheranism*; *Reformation*). Marburg obtained urban rights in 1192, became in 1228 the seat of the widowed Elizabeth, and, after her canonisation, a place of pilgrimage. It gained importance as a seat of the Teutonic Order, and in the 15th to 17th centuries as residence of



Marcus Marcellus,  
Roman soldier  
From a statue



vided earls of March from 1328 to 1425. In 1425, when Edward, the 5th earl, died, the estates passed to Richard, duke of York, who was a kinsman, and he and then his son Edward IV were earls of March. (See Mortimer.)

The Scottish earldom was long associated with the family of Dunbar, Patrick, 8th earl of Dunbar, being styled earl of March because of his position as guardian of the marches. The title was forfeited owing to treason in 1434. In 1619 the 3rd duke of Lennox was made earl of March, and in 1675 Charles Lennox, a natural son of Charles II, was made duke of Lennox and earl of March. The title is now used as a courtesy one by the eldest son of the duke of Richmond, a descendant of Lennox. Another earldom of March was created in 1697 for William Douglas, a younger son of the 1st duke of Queensberry. William, the 3rd earl, became the 4th duke of Queensberry, but both titles became extinct on his death in 1810. See Queensberry, Duke of.

**March, ROGER MORTIMER, EARL OF** (c. 1287-1330). The eldest son of Edmund Mortimer, he was made viceroy of Ireland 1316, and in 1321 joined the rebellion of Earl Thomas of Lancaster. He was imprisoned in the Tower, but, escaping to France in 1324, he there formed a liaison with Edward II's queen, Isabella, with whose aid he invaded England. Edward was de-throned and murdered, Mortimer and his paramour becoming the actual rulers. In Oct., 1330, Edward III captured them in Nottingham Castle. Mortimer was hanged at Tyburn, Nov. 29, 1330.

**March, FREDRIC** (b. 1897). An American film actor. Frederick McIntyre Bickel came from Wis-



Fredric March,  
American actor

consin to make his stage debut in Baltimore, in 1920, and played in New York the same year. Entering films in 1928, he came to the fore in *Man-slaughter*, 1931; then *Dr. Jekyll* and *Mr. Hyde* showed his talent for character playing. He was *Browning in The Barretts of Wimpole Street*; *Vronsky in Anna Karenina*; and the hero in *Anthony Adverse*. In 1944 the part of Mark Twain allowed him scope for comedy, and he was starred in *The Best Years of Our Lives*, 1947.

**Marchand, JEAN BAPTISTE** (1863-1934). French soldier. He was born at Thoissey, Aisne, Nov. 22, 1863, and entered the army in 1883, gaining a commission in 1886. He explored extensively in Africa, 1888-98, and in 1898 was in command of the small French expedition concerned in the Fashoda Incident (*q.v.*). He subsequently served in China before resigning from the army. Recalled at the outbreak of the First Great War, he was given command of a brigade, being wounded in Oct., 1914, and again in Champagne in Sept., 1915, when leading his troops. He was promoted general of division in April, 1917, and gained a reputation for great personal bravery. He died Jan. 14, 1934.

**Marchena.** Town of Spain, in the prov. of Seville. It is 47 m. by rly. E.S.E. of Seville, and is a junction on the Cordova-Cadiz rly. A picturesque place, with decaying Moorish fortifications, it has a palace and some interesting churches, one on the site of a mosque. There are sulphur springs and baths, and a trade in agricultural produce. Pop. 15,310.

**Marches** (Fr. *marche*, border). Term applied to territory about the frontiers of adjoining countries, and especially to the borderland of England and Wales and of England and Scotland. The German equivalent is *mark*. Before the final conquest of Wales by Edward I the Welsh Marches comprised the greater part of south and central Wales, and were held by semi-independent English barons known as lords marchers, or marquesses. The marches were not divided into counties until 1536, when the authority of the lords marchers was abolished.

The borderland of England and Scotland was divided into the western and middle marches, each with a governor styled the warden of the marches, and a court intended to settle by peaceful methods the disputes between the people on either side of the border that had formerly resulted in mutual raids and forays. The word is also applied in Scotland to the borders of burghs and estates, and from early times the riding of the marches and the common-riding was an annual custom incumbent upon the bur-

gesses, in order to maintain their rights to the common lands and prevent the seizure and enclosure of these by the feudal barons.

**Marches.** A maritime region of N.E. Italy, situated between the Apennines and the Adriatic. It comprises the provs. of Ancona, Ascoli Piceno, Macerata, and Pesaro e Urbino. The principal products are limestone, sulphur, maize, tobacco, wine, silk, straw-plait, and paper. Formerly a papal possession, it was annexed in 1860 by Victor Emmanuel, and later incorporated in the kingdom of Italy. Area, 3,742 sq. m. See Picenum.

**Marchesi, MATHILDE** (1826-1913). Teacher of singing. She was born at Frankfurt-on-Main, March 26, 1826, and studied in Vienna, and Paris, thereafter having considerable success on the concert platform. In 1852 she married Salvatore Castrone, Marchese della Rajata, Palermo, who as Salvatore Marchesi became famous as a baritone singer and teacher of singing. With her husband, she taught singing at the Vienna conservatoire, 1854-61, at Cologne, 1865-69, and later settled in Paris. Her publications include *École de Chant*, a series of books of Vocalises; in English, *Ten Singing Lessons*, 1901, and an autobiography, *Marchesi and Music*, 1897. She died Nov. 18, 1913.

Her youngest child, Blanche Marchesi, who became the wife of Baron Caccamisi, was educated at Vienna, Frankfurt, and Paris, studied singing under her mother, and herself began to teach at the age of 15. She began her career as a singer at Berlin in 1895, singing thereafter in opera, oratorio, and on the concert platform.

**March Hare, THE.** Character in Lewis Carroll's *Alice in Wonderland*, where he figures in the famous tea-party. The proverb, mad as a March hare, has its origin in the fact that hares are wilder in March, the breeding season, than at other seasons. See *Alice's Adventures* illus.

**Marchienne-au-Pont.** Town of Belgium, in the prov. of Hainaut. It lies in the Sambre valley, 2½ m. by rly. W. of Charleroi, and is an important centre of the coal, iron-working, and engineering industries of the Charleroi area. Glass also is manufactured. Population 22,000.

**Marchioness.** Feminine of marquis (*q.v.*). The Marchioness is the nickname of a character in Dickens's novel *The Old Curiosity Shop*. The ill-used, half-starved maid-of-all-work to Sally and

Sampson Brass is called the Marchioness by Dick Swiveller, who teaches her to play cards and gives her an interest in life. She nurses him through a serious illness, and he eventually makes her his wife.

**Marcion.** Founder of an heretical sect known as Marcionites. He lived in the 2nd century, was a son of a bishop of Sinopé, and was influenced by Docetic Gnosticism. He taught that there was one true God, unnameable and invisible; that the world was created by the Demiurge, identifiable with the Jewish Jahveh; and that the Devil held an intermediate position between the true God and the Demiurge. Christ had not a real body, otherwise He would have connected Himself with matter, a thing essentially evil. The O.T. proceeded from the Demiurge. Of the N.T. Marcion accepted only those parts he regarded as uncorrupted by Judaism. He taught three baptisms for sin, believed in transmigration, denied the resurrection of the body, and advocated extreme asceticism. Tertullian wrote five books against him.

**Marcomanni.** Teutonic tribe that flourished in the first centuries of the Christian era. The name means men of the border or mark. Under their king Maroboduus, who promoted Roman civilization, they extended their dominions from the neighbourhood of Ratisbon (Regensburg) to Bohemia and Moravia. They shared in the great struggle with the Romans, known sometimes as the Marcomannic War, which lasted from 167 to 180, when Commodus bought them off. They were afterwards absorbed by the Bavarians.

**Marconi, GUGLIELMO, MARQUIS (1874-1937).** Italian scientist and inventor. Born near Bologna, Italy, April 25, 1874, of Italian and Irish parents, and educated at the university there, he became interested in the discoveries by Hertz regarding the possibility of wave transmission. He improved existing attempts to make use of the Hertzian waves, notably in the Onesti and Branly coherers, and carried out experiments in 1895-96. Then he submitted his inventions to the British government. In 1897 the Marconi Wireless Telegraph Company was founded, and in 1899 signals were transmitted across the English Channel. Marconi developed a military transmitting and receiving set which was used successfully by the British army in the S.

African war. In Dec., 1901, communication was established between Cornwall and Newfoundland, and a rapid advance was made in methods of communication with ships at sea. By 1903 commercial messages were being transmitted to America by wireless. In 1910-11 Marconi invented a new valve receiver and a new detector, developed a duplex system of transmission, and installed his apparatus in most large ocean-going liners.



Guglielmo Marconi,  
Italian scientist

During the First Great War he was in charge of all radio operations for his government, and introduced radio direction-finding, whereby the position of a stationary or moving transmitter could be plotted and fixed by listening stations. In 1917 he went to America as member of an Italian mission, and in 1919 was a delegate to the Paris peace conference, signing treaties with Austria and Bulgaria.

While experimenting with short waves in 1924, he invented the beam system for long-range transmission which eventually was adopted for the British post office radio telegraphy services to Canada, S. Africa, India, and Australia. In 1934 he introduced an ultra-short wave device to enable ships to enter and clear port in dense fog.

Until the advent of fascism, Marconi took little interest in politics, but in 1923 he joined the fascist party and, becoming a close friend of Mussolini, was appointed a member of the grand council and in 1929 a marquis. During the Abyssinian war he was an ardent propagandist. In 1905 he had married Beatrice O'Brien, daughter of Lord Inchiquin; the union was dissolved in 1927, when he married Countess Bezi-Scali. Marconi's numerous scientific honours included a share of the Nobel prize for physics in 1909, the Albert medal of the Royal Society, and the Kelvin medal. He was made honorary G.C.V.O. in 1914 and an Italian senator in 1915. Consult M., Master of Space, B. L. Jacob and D. N. B. Collier, 1935; M., The Man and his Wireless, O. E. Dunlop, 1937.

**Marconi Inquiry.** Political incident of 1913. It arose from the British government's proposed contract with the Marconi Co. for

the building of a chain of Empire wireless stations. Rumours spread that members of the government were financially interested in the company. Sir Rufus Isaacs (later Lord Reading), attorney-general, and Herbert (later Lord) Samuel, p.m.g., brought a libel action against a Paris newspaper, which withdrew its charges when it was shown that these ministers had dealt only in shares in the American Marconi Co. A select committee was appointed by the govt. and by parliament to inquire into the matter. The Marconi Co. withdrew from the contract in which, however, the committee could find nothing reflecting against the government's integrity. But a minority report criticized the conduct not only of the attorney-general and the p.m.g., but of the chancellor of the exchequer (D. Lloyd George) and the government chief whip (the Master of Elibank), who had also dealt in the American company's shares. After a debate the house accepted expressions of regret from the ministers.

**Marcus Aurelius (121-180).** Roman emperor 161-180. Marcus Annius Verus, who, as the adopted son of the emperor Antoninus Pius, bore the name of Marcus Aurelius Antoninus, is regarded as representing the perfect ideal of the highest pro-Christian conception of character. Drawn from the study of Stoic philosophy to discharge the functions of the Platonic philosopher-king as ruler of the civilized world, he loyally exerted himself to the uttermost.



Marcus Aurelius,  
Roman emperor  
*from a bust*

Unlike Antoninus Pius, he was not to enjoy peace. In the East the Parthians fell upon his borders. Thither in 161 he sent his young colleague Verus. The Parthians were beaten, not by the incapable Verus, but by Avidius Cassius. Across the Rhine and the Danube, Germans and Dacians rose in revolt, and Italy itself was smitten with pestilence. To appease the gods, offended by the decay of religion, Marcus enacted solemn purificatory rites and intercessions. His hand fell heavily upon the Christians, to whose doctrines the wrath of Heaven was in part attributed. Then in 168, though he had no experience in war, he as a matter of duty placed himself with Verus at the head of the

legions. Without apparent reason the tribes of the upper Danube made their submission, without striking a blow. But the submission had been only temporary. From this time, on one frontier or another, Marcus, whose colleague died in 169, was summoned to suppress barbarian risings, and even a rebellion raised in 175 by Avidius Cassius in the east.

The emperor's campaigns were conducted conscientiously and successfully, though without any remarkable display of military talent; the most notable event was a famous battle in which his legions were saved from destruction by an extraordinary storm which created a panic among the opposing forces—a storm variously attributed to the prayers of a Christian legion, and to the virtues of the emperor. In victory Marcus displayed an unflinching magnanimity; but his victories were won at the cost of concessions, which permitted large numbers of barbarians to settle in Roman territory, and greatly hastened the tendency to multiply the barbarian contingents in Roman armies. His weakness found unfortunate expression in his blindness to the vices of his son and successor, Commodus, and possibly of his wife Faustina, though her character has been variously judged. Marcus died on March 17, 180, at the close of a successful, but by no means conclusive, campaign in the regions of the upper Danube. Apart from his great and uncongential work as emperor and the nobility of his public life, Marcus won a permanent place in the affection of all pious and contemplative souls by placing on record his *Meditations*, the noble thoughts of a spirit pure and sincere. *Consult* Lives, E. Renan, Eng. trans. W. Hutchinson, 1904; C. C. Dove, 1930; F. H. Hayward, 1935.

### Mar del Plata.

The Brighton of Argentina, in the prov. of Buenos Aires. Near Cape Corrientes, and 230 m. S.E. of Buenos Aires, it is visited in the summer season by 500,000 people. It has many fine hotels, and other attractions include the casino, fishing, golf, polo, and horse racing. Pop. est. 85,000.

**Mardi Gras.** Festival held on Shrove Tuesday in Paris. The festival, which has been long established, derives its name from the fat ox which is led in procession through the streets of Paris on that day, followed by the triumphal car of a child, nicknamed the king of butchers. A similar festival is held in Italy, and in New Orleans, U.S.A. See Carnival; Lent.

**Mardonius** (d. 479 B.C.). Persian general and son-in-law of Darius the Great, king of Persia. He commanded the first expedition against Greece, but his land forces suffered heavily at the hands of the Thracians, while his fleet was almost wholly lost in a storm. In the second Persian expedition under Xerxes, Mardonius acted as lieutenant to the king, and was left behind after the defeat at Salamis with an army of 300,000 men. He was defeated and slain at Plataea in 479 B.C.

**Marduk.** City god of Babylon. After Hammurabi established Babylon's supremacy, about 2,250 B.C., Marduk appropriated the prerogatives of older Sumerian gods, especially Enlil, with their title Bel, their legends, creation epics, and hymns. The Biblical Bel and Merodach (Isaiah, Jeremiah), and the god of Nebuchadnezzar (Daniel 9), his worship was centred in the Esagila temple at Babylon. Originally the vernal sun, he became lord of life, light, war, and healing. See Babylonia.

### Mare Clausum

(Lat., closed sea). Name of a book written by John Selden in 1636. In 1609 Grotius had written his *Mare Liberum*

(free sea), in which he attempted to show that all men have the right to use the seas freely. To this Selden replied that the English nation had special rights in the narrow seas that engirdle the British Isles. The latter doctrine has been abandoned, and territorial waters are now restricted to a three-mile limit from the shore.

**Maree.** Loch or lake of Scotland. In the county of Ross and Cromarty, it is about 21 m. W. of Kingwall. Fringed for much of its circuit with lofty mountains, it forms one of the most magnificent pieces of scenery in Scotland. The lake is 13½ m. long, has a breadth varying from ¼ m. to 2 m., and covers 11 sq. m.

**Maremma.** Former marsh land of Tuscany, Italy. A coastal tract on the Tyrrhenian Sea, it extends from Piombino to Orbetello and penetrates inland to a depth of from 15 m. to 20 m. Well drained in ancient times, it was prosperous until the underground canals fell into disrepair, and in spite of recent attempts at reclamation, it long remained a malarious forsaken district, until under the fascist régime it was drained once more.

**Marengo.** Village of N. Italy. It lies S. of the Po, 5 m. E. of Alessandria. It is famous for the battle, one of Napoleon's greatest victories, fought between the French and the Austrians, June 14, 1800.

The Austrian army in N. Italy, in the spring of 1800, was about 100,000 strong, but it was divided, only a portion watching for a French advance. Napoleon assembled his army of 40,000 men in Switzerland, led it secretly across the S. Bernard, and on June 2 entered Milan, thus cutting off the Austrians from their homeland. His next move was to find the enemy, but his information was not very accurate, and a good part of his force was scattered in search



Maree, Scotland. View of the loch and islands, from near Talladale



Marduk destroying the monster Tiamat or Chaos. From a Babylonian bas-relief in the British Museum

when the Austrians, under Count Melas, advanced from Alessandria to Marengo, where was the main French army.

The French, outnumbered, put up a stout fight when the Austrians advanced across the Bormida. They were forced, however, to retreat, and were falling back rapidly when at 11 a.m. Napoleon arrived. The rearward movement was continued, on the whole in good order, and the Austrians about 3 p.m. regarded the battle as won. But suddenly came a change. Recalled by Napoleon, Desaix and his division reached the field and an attack was organized. All the available guns were brought into action. Desaix advanced from Marengo, while the cavalry charged on the right flank of the enemy. The Austrians soon broke and fled. The French lost about 4,000 men, including Desaix; the Austrians about 9,000; the main consequence of the victory was the cession of N. Italy to France. See Napoleon.

**Mare Nostrum** (Lat. our sea). Term used by the Romans for the Mediterranean Sea when they were masters of the countries bordering it. Before the Second Great War Mussolini in his propagandist speeches expressed his intention of making the Mediterranean an Italian lake, or *mare nostrum*, assuring the people that no enemy force would be allowed to exist there or to traverse it in the event of war.

**Mare's-tail** (*Hippuris vulgaris*). Aquatic perennial herb of the family Haloragaceae. It is a native of temperate and cold regions of the N. hemisphere. It has a stout rootstock which creeps in lakes and ponds, sending up slender, many-jointed stems, closely invested with whorls of slender leaves. The minute flowers are green, with red anthers but no petals.

Mares' tails is a term popularly applied to high cirrus cloud when it appears in tufts. See Cloud.

**Mareth Line.** System of defences some 20 m. long constructed in Tunisia by the French between the First and Second Great Wars as a defence against possible Italian attack from the E., Tunisia being one of the French possessions vociferously claimed by Mussolini. It took its name from the town of Mareth through which it passed.

The line occupied a series of wadi (watercourse, usually dry) edges and hillocks across the plain from the coast near Zarat to the Matmata hills, among which it ended. After the defeat of France in June, 1940, the Italians took possession of it, and altered it as far as possible to make it defensible against attack from the W. When the Germans and Italians were retreating before the British 8th army in 1942-43, a good deal of work was put into strengthening it. The strongest part of the line ended some 10 m. from the coast, from which point to the sea the natural difficulties of the country had simply been strengthened by occasional pillboxes, barbed wire, and minefields.

After the capture of Medenine, Feb. 20, 1943, Montgomery paused until the middle of March to build up his forces. Rommel had gone back sick to Germany, and the German-Italian army, now occupying the Mareth line, was under the command of the Italian general Giovanni Messe, who, determined as he told his troops to show "those German swine who retreat that we can fight better than they," put up a stubborn defence. The enemy was, however, driven from his outposts on the S. of the wadi Zigzau, which formed a natural anti-tank ditch before the line, during the nights of March 16 and 17. The main attack began on March 20. The wadi was conquered, but there the advance was held. In the meantime Gen. Freyberg (*q.v.*) was leading a column of British and French armour, New Zealand and Greek infantry, round the Axis right flank through the desert to the W. of the Matmata hills. Moving with great speed, this column reached El Hamma, some 35 m. N.W. of Mareth, 20 m. W. of Gabes, on March 27, capturing it after violent fighting two days later.

To escape encirclement Messe abandoned the Mareth line on March 28 and retreated rapidly beyond Gabes to the wadi Akarit. See North Africa Campaigns.

**Marett, ROBERT RANULPH** (1866-1943). British anthropologist. A Jerseyman, born June 13, 1866, he was educated in the island at Victoria College, and at Balliol, Oxford. In 1891 Exeter College, Oxford, elected him fellow and

lecturer in philosophy; and he was its rector from 1928 until his death, Feb. 18, 1943. He held a readership in social anthropology, and during 1913-18 was president of the Folklore Society. Marett's province was anthropology in relation to philosophy, and he showed their connexion in *The Birth of Religion*, 1909; *Psychology and Folklore*, 1920; *The Diffusion of Culture*, 1927. An engaging autobiography, *A Jerseyman at Oxford*, appeared in 1941.

**Margam.** Urban district of Glamorganshire, Wales. It is near the coast 4 m. S.E. of Aberavon, and is a coal mining centre. Near the town is Margam Abbey, long the residence of the Talbot family. Until a sale in 1921, it contained some magnificent works of art. In the park is a conservatory over 300 ft. long, containing a splendid collection of orange, lemon, and other trees. It stands near the ruins of a Cistercian abbey, founded in 1147. Margam church, dedicated to the Virgin Mary and restored in the 19th century, was originally the abbey church. Margam Hill is about 800 ft. high.

**Margaret.** Feminine Christian name. It is derived through the Greek from a Persian word meaning a pearl. Very popular in most European countries, it has many variants, among them Margarita, Marguerite, and the many forms of Margery or Marjorie.

Margaret was long a popular name for princesses in England, Scotland, and France. In addition to those noticed separately, mention may be made of Henry III's daughter Margaret (1240-75), who married Alexander III of Scotland, Dec. 26, 1251, and through her daughter, another Margaret, was the grandmother of the Maid of Norway; of Edward I's second wife, Margaret (c. 1282-1318), daughter of Philip III of France; of James I of Scotland's daughter Margaret (c. 1425-1445), who married Louis XI of France, in 1436, both being children; she is the princess who is said to have kissed the sleeping poet, Alain Chartier; and of James III of Scotland's wife Margaret (d. 1486), daughter of Christian I, king of Denmark. Another was the countess of Richmond and Derby, and the mother of Henry VII. The daughter of the duke of Somerset, she was the benefactress who is immortalised at Oxford and Cambridge as Lady Margaret.

**Margaret.** (c. 1045-93). Saint and Scottish queen. The daughter of Edward, a son of the English



Mare's-tail. Stems and leaves of this aquatic plant

king, Edmund Ironside, she was born in exile, probably in Hungary. Her father died young, and the princess, having returned to England with her brother Edgar Atheling, took refuge with the king of Scots. About 1067 she was married at Dunfermline to King Malcolm III. In Nov., 1093, her husband and eldest son were killed in battle with the English, and on the 17th the queen died in Edinburgh. Three of her sons, Edgar, Alexander I, and David I, became kings of Scotland. Margaret won a great reputation among the Scots by her charity and piety. She was canonised in 1250, and her festival is July 20.

**Margaret (1430-82).** Queen of Henry VI of England, known as Margaret of Anjou. Born March 23, 1430, the daughter of René of Anjou, duke of Lorraine and titular king of Sicily and Jerusalem, she was married to Henry at Titchfield Abbey in April, 1445. Her friendship with the De la Poles made her many enemies, and she made her position more difficult by interference in politics and her association with Somerset against Richard of York. In 1453 her son Edward was born, and during the fit of madness which attacked her husband, 1453-55, Margaret did her utmost to thwart York. The Wars of the Roses broke out, and after a series of defeats and victories, ending in the second battle of St. Albans, 1461, she retired to France. Allied to Warwick, she returned to England, and after her defeat of Tewkesbury, 1471, was made prisoner. Liberated after five years, she returned to France, and died April 25, 1482. *See* Henry VI; *Roses*. Wars of the; *consult* Life, M. A. Hookham, 1872.

**Margaret (1283-90).** Queen of Scotland, called the Maid of Norway. The daughter of Eric II of Norway, and Margaret, daughter of Alexander III of Scotland, she was declared heir to the Scottish throne in 1284. In 1286 her grandfather was killed and she became nominally queen. She remained in Norway until 1290, when, a marriage having been arranged between her and the future English king, Edward II, she was sent to Scotland, but died on arriving at Orkney in Sept.

**Margaret (1489-1541).** Queen of Scotland. Eldest daughter of Henry VII of England, she was born Nov. 29, 1489. In Aug., 1503, after protracted discussions about policy and dowry, she was married to James IV of Scotland, this being



Margaret, younger daughter of King George VI and Queen Elizabeth

the alliance which led to the union of England and Scotland under James VI. In 1513 her husband was killed at the battle of Flodden, and Margaret became regent for her child James V. In 1514 she married Archibald Douglas, earl of Angus. The regency was taken from the queen, who sought refuge in England. For a time she remained there, now trying to get a divorce from her husband, but soon she was again in Scotland, active in the interests of her son. The divorce obtained, in 1527 she married Henry Stewart, who was made Lord Methven. She died at Methven Castle, Oct. 18, 1541.

**Margaret (1353-1412).** Queen of Denmark, Norway and Sweden. The daughter of Valdemar IV of Denmark, she was married at the age of ten to Haakon VI of Norway. On his death, 1380, she became queen of that country and on the death of her son Olaf, 1387, became queen of Denmark as well. Shortly after she was invited by some of the Swedish nobles to accept their crown, this she did, her army defeating the Swedes under King Albert in 1389. By the union arranged at Kalmar, the three Scandinavian kingdoms were brought under one rule, which Margaret continued to exercise until her death, Oct. 28, 1412. *Consult* Margaret of Denmark, M. Hill, 1898.

**Margaret (1553-1615).** Queen of France, known as Marguerite of Valois. The daughter of Henry II and Catherine de Medici, she was born May 14, 1553. In 1572 she was married to Henry of Navarre, afterwards Henry IV, the ceremony being marked by the massacre of St. Bartholomew. She was divorced in 1599 and died in Paris,

March 27, 1615. Cultured and beautiful, yet licentious and extravagant, Margaret had several lovers. She wrote poems and some Memoirs (English translation, Violet Fane, 1892). She is *La Reine Margot* of romance.

**Margaret (b. 1930).** British princess. The second daughter of King George VI and Queen Elizabeth, she was born at Glamis Castle, Aug. 21, 1930, and christened Margaret Rose. She is next in the line of succession to King George VI after her elder sister Princess Elizabeth and the latter's issue.

**Margaret (1492-1549).** French princess. The daughter of Charles of Orleans and the elder sister of Francis I, she is generally known as Margaret of Angoulême. Born at Angoulême, April 11, 1492, she married in 1509 Charles, duke of Alençon, and after his death, Henry, king of Navarre. She died Sept. 21, 1549, leaving a daughter, Jeanne, who became the mother of Henry IV. Margaret is best known for her interest in literature. Her court was the resort of poets and she herself wrote poems. Her best-known work is the *Heptameron*, stories on the lines of Boccaccio's masterpiece. Her niece another Marguerite (1523-74), daughter of Francis I, was also known for her interest in literature. She married Emmanuel Philibert, duke of Savoy. *See* Women and Men of the French Renaissance, E. Sichel, 1901.



Margaret of Angoulême

**Margaret (1446-1503).** Duchess of Burgundy. The daughter of Richard, duke of York, and the sister of Edward IV, she was born at Fotheringay, May 3, 1446. On July 3, 1468, she was married at Damme to Charles, afterwards duke of Burgundy. In the Netherlands Margaret was a staunch friend to her brother and his cause, and during her long widowhood (1477-1503) her interest in English affairs was continuous. She aided Edward to recover his throne in 1470, and after the succession of Henry VII never ceased in her attempts to overthrow him.

**Margaret (1522-86).** Duchess of Parma, and regent of the Netherlands. A natural daughter of the emperor Charles V, in 1533 she married Alessandro de' Medici, duke of Florence and after his death, Ottavio Farnese, duke of



Parma. A capable and fearless woman, when Philip II gave her the regency of the Netherlands, in 1559, she showed herself a strong and intelligent ruler, but she was unable to cope with the revolt which broke out in 1566, and in 1567 she retired to Italy.

**Margarine** (Gr. *margaron*, pearl). Name of an edible fatty food, defined by the Butter and Margarine Act, 1907, as "any article of food, whether mixed with butter or not, which resembles butter and is not milk-blended butter." Other enactments limit the proportion of butter in margarine to 10 p.c., and the water to 16 p.c. To comply with the requirements of the Food and Drugs Act, 1938, and the Emergency Laws (Transitional Provisions) Act, 1946, margarine when exposed for sale must be labelled with the name, and the outside wrapper must show the word margarine in letters as large as any others. Margarine for table use is usually enriched in vitamins up to 450-550 I.U.s vitamin A and 90 I.U.s vitamin D per oz. (See Irradiation; Irradiation of Foodstuffs.)

The margarine industry owes its origin to a prize offered in 1867 by Napoleon III for an artificial butter substitute which should conform as closely as possible physically and chemically with butter, but which would be cheaper and

hard (hydrogenated) fats and soft oils made possible by hydrogenisation, whereby liquid oils can be hardened to a solid white fat by the action of hydrogen. Thus a hard white fat is obtained from whale oil.

Relative proportions of animal and vegetable fats used depend upon the quality and texture desired, and upon the price, animal fats being generally more expensive. The vegetable fats undergo a purification which renders them tasteless, odourless, and colourless. The milk used is either fresh-skimmed or separated; it is introduced to impart the butter flavour and to emulsify the fats. Powdered milk is sometimes used instead of liquid milk. Flavour is enhanced by the addition of butyric and other cultures. In Great Britain a small quantity of colouring matter is added, but in some countries this is prohibited, and margarine is white. To its original colour it is sometimes stated that it owes its name.

Manufacture begins in an emulsifying machine known as the margarine churn, in which the milk, melted fats, and vitamin A and D concentrates are agitated at a strictly controlled temperature until an emulsion is formed. This must then be chilled, crystallised, kneaded, blended, and automatically weighed and wrapped.

coast of Venezuela, is about 19 m. across. Margarita was discovered by Christopher Columbus in 1498 Pop. 70,000. It is famous for its pearl fisheries and hand-made straw hats. It also exports fruit, and tobacco.

**Margate**. Mun. borough, watering-place, and seaport of Kent. In the isle of Thanet, it is 15 m. N.E.



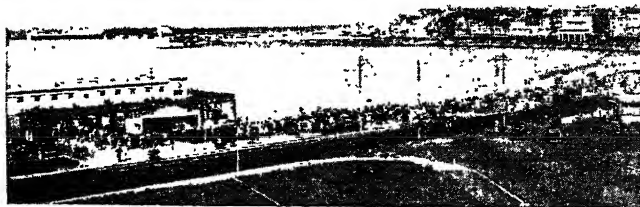
Margate arm

from Canterbury and 74 from London, with three rly. stations. It is also connected with London by regular steam-boat and road coach services. It is a member of the Cinque port of Dover, but is chiefly known as a pleasure resort, the air being remarkably bracing. It has a jetty, a pier, a theatre, winter gardens, good sands, and a fine esplanade. The chief church is S. John the Baptist, of which some of the original Norman work remains. The tower of the Holy Trinity church, a noted landmark, still stands, although the church itself was destroyed during an air raid in the Second Great War. Dane Park is a public pleasure ground. The borough includes the townships of Westgate-on-Sea and Birchington. The E. end of the town is known as Cliftonville, and the central area as Westbrook.

The town has an internal transport system, organized by the E. Kent Road Car Co., which maintains bus connexions with Broadstairs, Ramsgate, and other places of interest in Thanet and E. Kent. Margate was originally a fishing village and a small port. Towards 1800 it became a watering-place; in 1857 it was made a borough. Pop. 40,000.

**Margaux**. Town of France, in the dept. of Gironde. It is 16 m. N. of Bordeaux, with which it is connected by rly. On the W. shore of the Gironde estuary, it is noted for its Médoc wines. Pop. 2,000.

**Margesson**, HENRY DAVID REGINALD MARGESSON, 1st Viscount (b. 1890). British politician. Educated at Harrow and Magdalene College, Cambridge, he was elected Unionist M.P. for Upton division of West Ham, 1922, and for Rugby, 1924. A junior lord of the treasury, 1926-29 and 1931, he was made parliamentary secretary to the treasury and government chief whip in 1931. The strictness of his disciplinary practice in the latter capacity aroused some resentment and criticism, and was occasionally the object of scorn



Margate, Kent. Harbour, pier, and promenade of this bracing S.E.-coast watering-place, a popular holiday resort

keep better. The prizewinner in 1869, a French chemist, Mège-Mouriès, worked out a manufacturing process in which fresh beef fat was digested with a weak alkaline solution in the presence of pepsin. The resulting mixture, cooled, churned with milk, and pressed, was sold in Paris as oleo-margarine.

After 1910 vegetable oils and fats, e.g. those derived from coconut, palm kernel, ground-nut, cottonseed, soya bean, kapok, maize, and sunflower, gradually replaced the exclusive use of animal fats.

A more recent development is the blending in correct proportions of

In Great Britain the margarine industry is principally centred in the Thames and Mersey districts.

**Margarita**. Island in the Caribbean Sea, belonging to Venezuela. It lies off the N.E. coast of Venezuela, and with several adjacent islands forms the state of Nueva Esparta. Its length is 44 m. and its breadth varies from 5 m. to 20 m. Composed of two mountainous portions connected by a low isthmus, its highest point is over 4,000 ft. in alt. The capital is Asunción (g.v.), and the chief port is Pampatar, with a fair harbour. The strait of Margarita, which separates the island from the



among the opposition. Created a privy councillor in 1933, Margesson was secretary of state for war 1940-42. He was created viscount in 1942, the heir being his son, Francis Vere Hampden Margesson.

**Marghilan.** Town of Uzbek S.S.R. in the former province of Ferghana. It is 30 m. E. of Khokand. The chief industries are the manufacture of silk and woollen goods. It is the traditional burial-place of Alexander the Great. Pop. est. 40,000.

**Marginal Theory.** In economics, the theory that the individual's ideas concerning value and hence the desirability of economic action are determined by the margin or the next increment. The marginal utility of a commodity at any time to a person, that is, the subjective value of it to him, depends on his ideas concerning an additional increment; the marginal demand price is the amount that he is just willing to pay to obtain an additional increment; the marginal production of any commodity is that which is just profitable to certain producers at a stated price; the business man tries to ensure that the marginal revenue from extra business shall exceed the marginal costs. The higher the price for a commodity, the lower the margin of production; on the other hand, a higher price raises the marginal demand, that is, excludes those who were previously just willing to buy. The importance of marginal factors in the study of production, consumption, investment, employment, etc., was stressed by Alfred Marshall (Principles of Economics). J. M. Keynes (The General Theory of Employment, Interest and Money) emphasised other elements, such as the marginal propensity to consume, the marginal efficiency of capital, and the marginal multiplier. See Economics.

**Margrave.** (Ger. *Markgraf*). German title meaning count of the march, or border, corresponding to marquess. It was at first applied to governors of frontier districts under Charlemagne. The word soon lost its original meaning, but was long used as a secondary title by German sovereign princes. The feminine form is margravine.

**Marguerite.** Name applied

by florists to several plants of the family Compositae. Originally belonging to the daisy (*Bellis perennis*), and sometimes used for the ox-eye daisy (*Chrysanthemum leucanthemum*), it is more generally applied in gardens to *C. frutescens*.

**Marguerite, PAUL** (1860-1918). French novelist. He was born in Algeria. In 1884, when a clerk in the ministry of instruction, he published his first book, *Mon Père*, embodying his father's letters. His first novel, *Tous Quatre*, 1885, was followed by *Amants*, 1889, and *Ma Grande*, 1891. Then, in 1896, began the collaboration with his brother Victor (b. 1866). Beginning with *Le Pariétaire*, 1896, and *Le Carnaval de Nice*, 1897, they produced *Une Époque*, consisting of four volumes of striking stories of the Franco-Prussian War, as well as many other novels, mainly historical in subject. After 1907 each continued to write alone. Paul died Dec. 30, 1918.

**Mari.** This autonomous republic of the R.S.F.S.R. is described under its alternative name of Cheremisa.

**Maria Christina.** Name of two queens of Spain more generally known as Christina (*q.v.*)

**Marriage Forcé, Le (The Forced Marriage).** Comedy-ballet by Molière. Was produced at The Louvre, Paris, Jan. 29, 1664. In the character of Pancrace, a philosopher who has one ear for French and another for scientific and foreign languages, and who regards it as scandalous to refer to the form (instead of the figure) of a hat, Molière makes fun of the fanatical Aristotelians of his time.

**Mariamnē** (d. 28 B.C.). Wife of Herod I, the Great, and grand daughter of Hyrcanus II. She was put to death by Herod in a fit of jealousy. Her pathetic story formed the subject of several tragedies, including one by Alexandre Hardy, 1610, and others by Tristan l'Hermite, 1637, and Voltaire, 1724. The name is a Greek form of Heb Miriam. See Herod the Great.

**Marianne Islands.** Archipelago of the N.W. Pacific Ocean also called Marianas or the Ladrões. They lie N. of the Carolines and about 1,500 m. E. of the Philippines. The group to the N. are mountainous and uninhabited;

those to the S. are flat and low-lying, the chief being Guam (*q.v.*), which was ceded by Spain to the U.S.A. in 1898, Saipan, Tinian, and Rota. The climate is warm and moist, and the islands produce rice, maize, cotton, sugar, tobacco, and coffee. They were discovered by Magellan in 1521, and were called 'Thieves' (Sp. *ladrones*) Islands. Spain sold them (except Guam) to Germany in 1899 for £840,000. After the First Great War, Japan was appointed mandatory over them, and they were actively fortified. During the Second Great War, Guam was captured by the Japanese on December 9, 1941. On Feb. 22, 1944, the U.S. Pacific fleet struck Saipan and Tinian, the attack being repeated June 10-13, when Japanese bases on Tinian and Guam were shelled and bombed, and on June 15 U.S. Marines landed on Saipan. Garapan, the capital of Saipan, was captured on July 3; organized resistance ceased July 9. U.S. casualties were heavy: 2,359 killed, 11,481 wounded, 1,218 missing; most of the Japanese garrison of 19,000 perished.

Bombardment of Guam from sea and air continued meanwhile until on July 20 amphibious forces landed. Japanese opposition was stubborn here also; organized defence ceased Aug. 10, but isolated groups continued to hold out until mid-Nov. The conquests of Tinian, 2½ m. S.W. of Saipan, was assisted by artillery fire from that island. It took from July 23 to Aug. 7. Japanese troops remaining in Rota I. were left helpless by the U.S. conquest of the other islands; they surrendered Sept. 2, 1945.

The U.N. trusteeship of the Marianne Is. was given to the U.S.A. in 1947.

**Marianske Lazne.** This inland watering-place of Czechoslovakia is better known as Marienbad (*q.v.*).

**Maria Theresa** (1717-80). Ruler of the Holy Roman Empire. Born in Vienna, May 13, 1717, a daughter of the emperor Charles VI, in 1736 she married Francis of Lorraine, grand-duke of Tuscany. In 1740, Charles VI died leaving neither sons nor nephews. By the pragmatic sanction he left as his heiress his daughter, Maria Theresa, who claimed the whole of the Hapsburg inheritance, Bohemia, Hungary, and the German territories, while it was sought to secure the imperial succession for her husband. There were, however, other claimants the chief being Charles



Paul Marguerite,  
French novelist



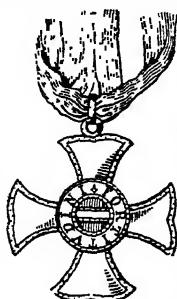
Marguerite. Flowers  
of the dog daisy

Albert of Bavaria, who procured his own election as emperor. Frederick the Great on his own account seized the province of Silesia, and Europe was plunged in the war of the Austrian Succession. A striking incident was the manner in which the Hungarians, whose loyalty to the Hapsburgs had been extremely doubtful, rallied in support of their courageous young queen. Before the war was ended in 1748 by the peace of Aix-la-Chapelle, Charles Albert died, and Francis of Lorraine was elected emperor as Francis I. At the peace, Maria Theresa had to submit to the loss of Silesia.

The recovery of Silesia and the punishment of Frederick of Prussia now became the great objects of her life. During the ensuing years her minister, Kaunitz, reconstructed the system of European alliances in order to crush Frederick, who anticipated the attack and opened the Seven Years' War by invading Saxony in 1757 and Bohemia in 1758. When the war ended in 1763, Frederick retained his conquests; Maria Theresa did not recover Silesia. In 1765 her son Joseph II succeeded his father as emperor, and was associated with his mother in the government of her dominions. Under pressure from Joseph and with great reluctance, she was accessory to the first partition of Poland in 1772. She died Nov. 29, 1780. Among her other children were the emperor Leopold II and Marie Antoinette, the queen of Louis XVI of France. A woman of great force of character, she fostered the re-

sources of her dominions, and greatly raised the prestige of the empire. *See Austrian Succession, War of; Frederick the Great; Pragmatic Sanction; Seven Years' War; consult also Lives, J. F. Bright, 1910; M. Moffatt, 1911; M. Goldsmith, 1936; C. L. Morris, 1938.*

**Maria Theresa, ORDER OF.** Austrian military order. It was instituted in 1757 by the empress



Maria Theresa.  
Badge and ribbon  
of the order

Theresa, instituted in 1750 and remodelled by Maria Theresa in 1771, which has a black ribbon.

**Maria Theresa Dollar.** Coin current in parts of Africa and Arabia. Dated 1780 and about the size of British crowns, the coins are minted in London, and are in use in the colony of Aden, Abyssinia, parts of the Anglo-Egyptian Sudan, and Arab territories bordering the Red Sea. On one side is the head of the empress Maria Theresa, and on the other the arms of the Austrian empire with the date. The coins have a silver content of 83½ p.c.

**Mariazell.** Town of Austria, in N. Styria. It is 56 m. S.W. of Vienna and is reached by a branch rly. from St. Pölten. Thousands of pilgrims annually visit the wonder-working statue of the Virgin that stands on a silver altar in the 14th century chapel incorporated in the 17th century church. Iron is worked here and at Donauwitz.

**Maribor (Ger. Marburg).** Town of Yugoslavia. It stands on both banks of the Drave, in Slovenia, 55 m. N.N.W. of Zagreb. It has a 16th cent. cathedral with a lofty tower, a castle, and a town hall of the 17th cent. It is the seat of the bishop of Lavant, who has a palace here. The town has a trade in wine and agricultural produce; other industries are the manufacture of railway stock, boots and shoes, etc. There was a settlement here in Roman times. The town is now a summer resort. Pop. 33,131.

**Marico.** Tributary of the Limpopo river, South Africa. It rises in the W. Witwatersrand, and forms part of the boundary between Transvaal and Bechuanaland. The valley contains good irrigable land and is rich in lead and silver. Zeerust is the principal town.

**Marie (1875-1938).** Queen of Rumania. Daughter of the duke of Edinburgh and granddaughter of Queen Victoria,

she was born at Eastwell, Kent, Oct. 29, 1875, and christened Marie Alexandra Victoria. On Jan. 10, 1893, she was married at Sigmaringen to Ferdinand, crown prince of Rumania, who succeeded to the throne in 1914, though he was not crowned until 1922. The queen won admiration for her courage and assistance during the cholera epidemic of 1913. After the First Great War she worked tirelessly for the cause of Greater Rumania, finally established by the peace treaties. After King Ferdinand's death in 1927 she lived mainly in England and the U.S.A., devoting herself to charitable works and to writing, in which she had already enjoyed success. Her books in English include *My Country*, 1916; *Ilderim*, 1925; and her autobiography in three volumes, 1934-35. She died July 18, 1938. Among her children were ex-king Carol of Rumania; Elizabeth, who married George II of the Hellenes, and Marie, queen of Yugoslavia.



Marie, Queen of  
Rumania

**Marie Antoinette (1755-93).** Queen of France. Daughter of the empress Maria Theresa and Fran-



Maria Theresa  
After the portrait  
at Versailles by  
J. M. Nattier



Marie Antoinette,  
Queen of France  
After Greuze

cis I, she was born in Vienna, Nov. 2, 1755. No pains were taken over her education, and she was barely 14 when she was betrothed to the dauphin, afterwards Louis XVI, marrying him May 16, 1770. Her rather boisterous humour and total disregard of etiquette immediately made her position at court difficult, and when her husband succeeded to the throne in 1774 the grossest libels were circulated about her. Receiving the ad-

dressess of Count Fersen and others, Marie Antoinette was soon an object of general hatred, and the affair of the Diamond Necklace (*q.v.*) only increased the odium in which she was held, and further besmirched her character.

Though the queen's worst fault was lack of understanding, she soon realized the weakness of her husband, and her influence was continually used against reform. The people attributed every national disaster to her, and when the financial situation of France grew desperate she was nicknamed *Madame Deficit*. When the Revolution came it was she rather than the king who was blamed for the misgovernment of centuries. Mirabeau could and would have saved her but she hated him and refused his aid. The abortive flight to Varennes only seemed to show more clearly that she was seeking foreign aid and inviting invasion. The Tuileries was invaded by the mob, June 20, 1792; Louis, wearing the cap of liberty, was treated with contempt, but upon Marie Antoinette the crowd heaped such hideous abuse that her hair turned white in the night.

On Aug. 10, the Tuileries was again stormed, her Swiss guards were killed at their posts, and the royal couple were sent as prisoners to the Temple. Marie Antoinette was separated from Louis in Dec., to see him again only on the morning of his execution, Jan. 21, 1793, and for ten months longer she lay in prison. Her son was taken from her in July. Two attempts were made to rescue her, and in Aug. she was moved to the Conciergerie. She appeared before the revolutionary tribunal on Oct. 14, and was accused of treason. She maintained her calm to the last, repudiating the unnameable charges Hébert levelled against her with a dignity which

impressed even her callous judges. The trial lasted two days, sentence of death was passed at 4.30 a.m. on Oct. 16, and at 11 she ascended the scaffold. *See Conciergerie*; *Effigy* illus.; *French Revolution*; *Louis XVI*.

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**Marie de' Medici** (1573-1642). Queen regent of France. A daughter of Francesco de' Medici,



Marie de' Medici,  
Queen of France  
From a medal

grand duke of Tuscany, she was born at Florence, April 26, 1573, and in 1600 married Henry IV of France. Henry was murdered in 1610 and Marie became regent to their son, Louis XIII. An ambitious and unscrupulous woman, she was influenced by Concini and his wife, Italians whom she had brought with her from Florence. In 1617 Louis asserted his authority, was privy to the murder of Concini, and exiled his mother to Blois, where she remained until 1619. She was then liberated, but her attempts to regain power were futile. She made an enemy of her former counsellor Richelieu, and in 1631 fled the country, dying at Cologne, July 3, 1642.

**Marie Galante.** French island in the West Indies, a dependency of Guadeloupe. It yields sugar and tropical fruits, and has rocky shores and no good harbour. The chief town is Grand Bourg. Area, 60 sq. m. Pop. 14,927.

**Marie Leszczynska** (1703-68). Queen of France. She was the daughter of Stanislas Leszczynski, king of Poland, and was born at Breslau, June 23, 1703. At 22 she was married to Louis XV of France, then 15. Homely, practical, and affectionate, she endured much from the insolence of her husband's favourites, and led a semi-retired life, engrossed in works of charity and religion. She had two sons and eight daughters. She died at Versailles, June 24, 1768.

**Marie Louise** (1791-1847). Empress of the French. A daughter of the emperor Francis I, she was born Dec. 12, 1791. She was 18 when Napoleon divorced his wife Josephine and arranged a marriage with this Austrian princess. The wedding was celebrated by proxy at Vienna, March 11, 1810, the civil and religious rites proper being celebrated in Paris on April 2. A son, styled the king of Rome, was born in 1811. Marie Louise acted as regent during Napoleon's absence in 1814, but proved utterly incapable. When the allies were approaching Paris, she left the city on the express instructions of Napoleon and joined his brothers at Blois. After his abdication she returned to Austria under the escort of the Count von Neipperg, refusing to reside with her husband at Elba. At the congress of Vienna the duchies of Parma, Guastalla, and Piacenza were settled upon her. In Parma she came under the influence of Neipperg, to whom she bore several children, and whom she married in 1822. After her departure from France she never beheld her son until he lay on his deathbed in 1832, and her whole aim seems to have been to forget her association with Napoleon. She died in Vienna, Dec. 18, 1847. The diaries of Marie Louise were edited by F. Masson, 1922. *See Napoleon*.



Marie Louise  
After Prudhon

**Mariénbad.** German and better-known name of the Czech inland watering-place also called Mariánské Lázně. This is in Bohemia, 19½ m. by rly. S.E. of Cheb (Eger), in a picturesque valley amid pine-clad hills. The ten springs are cold and contain



Mariénbad. General view of the Czech watering-place, beautifully situated among the pine-covered hills of Bohemia, at a height of over 2,000 ft.

Glauber's salt. Besides drinking water there are provided chalybeate, saline, peat, and mud baths. There are English, Russian, and Protestant churches.

**Marienberg.** Town of Saxony, E. Germany. It is 32 m. S.S.E. of Chemnitz, near the Bohemian frontier of the Erzgebirge. S. Mary's church and the town hall both date from the 16th century. There are textile and toy factories. Pop. 7,891.

**Marienburg** (Pol., Malbork). Town of Masuria, Poland, formerly in E. Prussia. It is on the right bank of the navigable Nogat, which from 1920 formed the frontier with the Danzig free state. Marienburg is famous as the residence of the grand masters of the Teutonic Knights, whose colossal castle, severely damaged in the Russian advance of 1945, still stands. This castle, covering with its annexes nearly 10 acres, was begun in 1276 and considered the greatest secular building of the Middle Ages; it was completed in 1398, taken by the Poles in 1457, and fell to Prussia in 1772. Between 1817 and 1914 all the buildings were repaired. Herewas held the plebiscite in 1920 which turned against Poland. Before the Second great War Marienburg had chemical, soap, cigar, and furniture industries and was a rly. junction. Its pop. of about 25,000, being German, was expelled when the Poles took over administration in 1945.

**Marietta.** City of Ohio, on the Ohio R., at the mouth of the Muskingum, 95 m. S.E. of Columbus. It is the co. seat of Washington co., the oldest settlement in the state, and the oldest town W. of the Alleghenies, founded in 1788 by a group of Revolutionary officers from New England. The name honoured Marie Antoinette. Civic rights date from 1852. Among memorials and landmarks are a sculptured group of six heroic figures by Borglum; the Campus Martius memorial museum; and the Mound cemetery, which includes an ancient Indian burial mound and the graves of 24 Revolutionary officers. In Marietta College library is a notable collection of Americana. The "elm city" has the largest elm in the U.S.A., shady streets, and Colonial, Tudor, and Gothic houses. It is served by rly.,

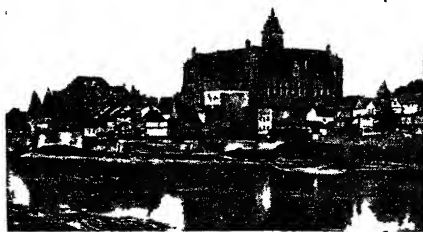
steamers, and airport. Situated in a gas and oil field, it manufactures castings, gas engines, safes, furniture, concrete products, chemicals and paints. Pop. 14,543.

**Mariette, FRANÇOIS AUGUSTE FERDINAND** (1821-81). French Egyptologist. Born at Boulogne,

Feb. 11, 1821, he graduated at Douai, 1841, became professor at Boulogne, studied Egyptology, and entered the Louvre, Paris, 1849. During an Egyptian visit he discovered the Serapeum (*q.v.*), 1851; and the so-called temple of the Sphinx, Gizeh, 1853. He returned to Cairo, 1858, as conservator of monuments and first director of the national museum, and directed excavations on 37 sites, including Dendera, Edfu, Karnak, Abydos, and Tanis (see *Mastaba*). There are Eng. trans. of his *Monuments*



F. A. F. Mariette, French Egyptologist



Marienburg, Poland. The castle of the Teutonic Knights, seen (pre-war) from across the Nogat

of Upper Egypt. 1877, and *Outlines of Ancient Egyptian History*, 2nd ed. 1892. He was made pasha, 1879, and died at Bulak, Jan. 19, 1881.

**Marigold** (*Calendula officinalis*). Annual herb of the family Compositae, native of S. Europe. It has oblong leaves, and large orange-rayed flowers, which are produced plentifully from spring to autumn. This is the marigold of the poets, and was used for making marigold vinegar, a domestic remedy, and for flavouring soups. The marigolds of florists are natives of Mexico, called African marigold (*Tagetes erecta*) and French marigold (*T. patula*). See *Marsh Marigold*.

**Mariinsk.** Town of the W. Siberian region of the R.S.F.S.R. It is 110 m. E. of Tomsk, on the Trans-Siberian rly. and the river Kiia. There are tanneries, brickworks, and soap factories. Mariinsk should not be confounded

with Mariisk, a variant spelling of Mari in the form Cheremisa-Mari republic (see *Cheremisa*); or with Marinsk, the name of two towns, one in the extreme N.W. of Kazakh S.S.R., the other on the Amur, 110 m. S. of Nikolaevsk, in the Far Eastern region.

**Marijuana.** American name for a narcotic also known as bhang (*q.v.*).

**Marinduque.** One of the Philippine Islands. Formerly a separate prov. and now a div. of the prov. of Tabayas, it lies S. of Luzon and covers an area of 352 sq. m. Its well wooded surface rises to 2,500 ft., in San Antonio and other peaks, and among the chief products are rice, hemp, coconuts, and copra. Tobacco has been cultivated with success since 1799, and the existence of petroleum is reported. Boac is the chief town.

#### Marine Biological Research.

Investigations aimed at increasing knowledge of the animal and plant life of the seas. Up to the time of the celebrated voyage of H.M.S. Challenger such investigations had been the concern of naturalists accompanying surveying vessels, or making individual efforts on a smaller scale. At about the time of the Challenger Expedition (*q.v.*) it became apparent to maritime powers that fisheries regulations were necessary; and the need for accurate knowledge of the biology of marine organisms of use to man, before regulations could be formulated, was recognized.

The advancement of marine biology (one aspect of oceanography) has been helped principally by the organization of further long-range, deep-sea expeditions, the establishment of marine biological stations at suitable places along the coasts, and fisheries investigations. Of many expeditions from Scandinavia among the more notable have been those of the Michael Sars (Norwegian) and the Dana (Danish). The Tiefsee, Plankton, and Meteor expeditions from Germany were outstanding. Prince Albert I of Monaco fitted out and personally headed several smaller expeditions, besides founding his famous museum of oceanography. Important expeditions have also been made by Dutch scientists. As a result of voyages of ships of the British Discovery Investigations, with the primary object of studying conditions relevant to the Antarctic whaling industry, more is known about the life of the southern ocean than of any other large sea-area.



Marine Biological Research. Plymouth Laboratory of the Marine Biological Association of the United Kingdom

In the U.S.A., since the pioneering days of Louis and Alexander Agassiz and the fisheries steamer *Albatross*, several expeditions, including the voyages of the *Atantis*, have been organized.

At M.B. stations students and research workers from the universities and other scientists can study marine organisms under good lab. conditions, with facilities for work on living material. The first great M.B. station was founded on an international basis at Naples by Anton Dohrn, in the same year (1872) that the *Challenger* sailed; most maritime countries now have several. In Great Britain the leading such station is the Plymouth lab. of the M.B. association of the U.K. The govt. fisheries lab. at Lowestoft was an early offshoot from Plymouth. Other important stations are at Port Erin, I. of Man, and at Millport, Gt. Cumbrae I., connected respectively with Liverpool and Glasgow universities. The small Gatty marine lab. at St. Andrews, recently reopened, was first in the field (1883). In the U.S.A. the most important stations are at Woods Hole and La Jolla.

Many universities, especially in the U.S.A., have oceanographical depts. where marine biology is studied. In the U.K., Liverpool and Hull have specialised in oceanography.

Marine biology concerns knowledge of the cycle of life in the sea as well as of the distribution, seasonal variations, and migrations of marine animals. Detailed morphological and biological work is also carried out on individual species. The life-histories, growth-rates, etc., of the fishes, and their environment, animate and inanimate, are studied, e.g. other

organisms inhabiting the same sea area in the light of their potentialities as food for the fish, or as enemies preying on the fish, and physical factors such as currents and temperature.

Practical applications of marine biology, other than those affecting fisheries, include methods of using seaweeds, and of dealing with

organisms which attach themselves to and foul ships' bottoms or damage under-water structures by boring.

The international council for the exploration of the sea, with H.Q. in Copenhagen, has fostered marine biology, and the science owes much to the cooperation of practical fishermen, whalers, and seamen generally. See Oceanography. Consult also *The Depths of the Ocean*, John Murray, J. Hjort, and others, 1912; *Founders of Oceanography*, W. Herdman, 1923; *The Seas*, F. S. Russell and C. M. Yonge, 1928; *Science of the Sea*, E. J. Allen, 3rd ed., 1928; *The Oceans*, Sverdrup, Johnson, and Fleming, 1942; *The Fish Gate*, M. Graham, 1943.

**Marine Corps, U.S.** Branch of the U.S. armed forces. Formed by the first Continental Congress in 1775 as a part of the naval establishment for duty at sea or on shore, it is the oldest force in the military or naval service

of the U.S. The corps furnishes detachments aboard battleships, cruisers, and aircraft carriers; maintains amphibious striking forces with the navy; and provides garrisons at naval shore stations. The organization includes infantry, artillery, paratroopers, armoured and supply units. There is also a Marine Corps air force. The strength in peacetime is 100,000; but during the Second Great War it was of the order of 500,000. The headquarters is at Washington, D.C. In both the First and Second Great Wars a Marine Corps women's reserve was formed; in the First for clerical duties only, and in the Second for administrative duties, to serve as ground crews of the air force, and to maintain vehicles and supply depots.

Considered a corps d'élite, units of the Corps especially distinguished themselves during the Second Great War in the defence of Wake Is., Dec., 1941; in the Philippines; in New Guinea; and in the capture or recapture of Guadalcanal, Guam, Saipan, Tarawa, Iwo Jima, and Okinawa.

**Marine Placers.** A type of mineral deposit formed by gravity concentration on sea-shores. When a rock forming a cliff or bluff is eroded by wave action, the heavy minerals tend to be concentrated in streaks and lenses on the beach—the concentration being effected by the movement of the water and differences in specific gravity between the light and heavy minerals. The beach at Nome, Alaska, was phenomenally rich in gold. See Placer Deposits.

**Mariner's Compass.** Type of navigating instrument used to indicate the direction in which a ship is moving. See Compass.

**Marines.** Name given in Great Britain to soldiers raised and trained for service on board ship. See Royal Marines.

**Marine Sedimentation.** Process by which solid materials are deposited on the sea floor. Marine sediments were first systematically investigated by Murray of the *Challenger* Expedition (q.v.), 1872–1876. Study of marine sedimentation involves research into, e.g., the origin of sediments, the way they are transported to the ocean floor, the formative chemical changes taking place, and the distribution and vertical stratification of the structures formed by the accumulation of this material. Many of the rocks at present above sea level are



Marine Biological Research. The 44-metre plankton net being shot from R.R.S. *Discovery II*



sedimentary deposits laid down under former seas.

Some of this sedimentary material, e.g. quartz, mica, feldspar, is derived from the weathering of rocks and is carried by streams in solution into the sea. Volcanic activity also contributes lava fragments, pumice, volcanic glass, etc. Of particular importance and interest are the skeletal remains of planktonic organisms, the foraminifera and pteropoda giving rise to calcareous deposits and the diatoms and radiolaria to siliceous deposits. Fragments of benthic organisms such as corals also contribute appreciable quantities of calcareous material. Inorganic substances precipitated out of sea water, especially calcium carbonate and probably dolomite, can form part of the sedimentary covering; even meteorites have been dredged from the sea floor.

Marine sediments fall into two groups, pelagic and terrigenous. Pelagic deposits are found in the deep ocean basins and extend across 75 p.c. of the total area of the ocean floor. Inorganic pelagic sediments (defined as those containing less than 30 p.c. of organic material) are known as red clay, while the organic pelagic sediments (containing more than 30 p.c. of organic material) are called ooze, e.g. globigerina ooze, pteropod ooze, diatom ooze, radiolaria ooze. Red clay and globigerina ooze are the most widely distributed, but of particular note is the almost continuous belt of diatom ooze around Antarctica, whose seas support a rich growth of diatoms. Radiolarian ooze is typical of the equatorial regions of the Pacific ocean, while pteropod ooze occurs in substantial quantities only in the Atlantic.

Terrigenous deposits form a zone near the shores, usually containing at least some coarse material derived from the land. Here are sands, silts, and muds, usually classified according to the size of the constituent particles. The remains of planktonic organisms may form part of these deposits, but in addition the calcareous skeletons of organisms which live on the sea floor (benthos) are particularly abundant in terrigenous sediments of low latitudes, in contrast to those of high latitudes which are chiefly composed of mineral fragments.

Dredges and snappers are used to collect samples of bottom deposits. For investigation of the vertical layering, long metal tubes are driven into the sediments

either by their own momentum or by an explosive charge, and when pulled out contain a sedimentary core. Cores up to five yards long are thus secured; they yield much valuable data on the past history of the oceans.

N. B. Marshall

**Marine Store Dealer.** Person dealing in anchors, cables, sails, old junk, old iron, or other marine stores. He must have his name and the words "Dealer in Marine Stores" painted in letters 6 ins. long on every warehouse belonging to him. He must keep proper books showing when each article was bought and the name, address, and description of the person from whom he bought it. He must not buy from persons under 16.

**Marinette.** City of Wisconsin, U.S.A., the co. seat of Marinette co. It stands on Green Bay, an arm of Lake Michigan, at the mouth of the Menominee, 161 m. N. of Milwaukee, and is served by rlys. and lake steamers. Connected with Menominee and Michigan across the river by bridge and car ferry, it is a port of entry. A trading post in 1795, it became, by virtue of its good harbour, a fur trading and lumber shipping centre, specialising in white pine until 1900. This activity has declined, but Marinette has paper and pulp mills and granite works. It was settled in 1830, and became a city in 1887. Pop. 14,183.

**Marinetti, FILIPPO TOMMASO** (1876-1944). Italian writer. Born at Alexandria, Dec. 22, 1876, he was educated at the Sorbonne, and was awarded a prize for his poem, *Les Vieux Marins*. Initiator of the futurist movement in arts and politics, he issued his first manifesto in 1909, writing and lecturing extensively and advocating principles which were to reach their logical development under fascism. After the First Great War he founded the *Fasci Politici Futuristi* in an attempt to associate his ideas more closely with those of Mussolini. Apostle of the doctrine that war brings out a nation's highest qualities, he fought in the Abyssinian campaign of 1935-36, and died Dec. 2, 1944. His chief works include *La Conquête des Étoiles*, 1902; *Futurismo e Fascismo*, 1922.

**Marini, GIAMBATTISTA** (1569-1625). Italian poet. He was born at Naples, Oct. 18, 1569, and lived successively at the courts of Rome and Turin before passing on to the patronage of Marie de Medici at Paris. Here he wrote his most

famous work, *Adone*, 1623, an epic romance on the loves of Venus and Adonis. His verse, sonnets, eclogues, canzoni, etc., all



G. Marini,  
Italian poet

enjoyed wide popularity, and long enjoyed wide popularity, Naples, March 25, 1625.

**Marino.** Town of Italy, in the prov. of Rome. Picturesquely placed at an alt. of about 1,200 ft. on the Alban Hills, it is 15 m. by rly. S.E. of Rome. It was the stronghold of the Orsini from 1266 to about 1420, when it passed to the Colonna family. The town is noted for its wine.

**Mariolatry.** Popular but incorrect name applied to the veneration or worship of the Blessed Virgin Mary, as practised by the R.C. Church. The term is incorrect, inasmuch as the supreme worship (*latreia*) has never been accorded to the B.V.M., but is restricted to God alone. R.C. theologians ascribe to her only the highest veneration (*hyperdulia*), while a lesser reverence (*dulia*) is paid to the saints generally. In the liturgical prayers of the missal and breviary are to be found only petitions that the faithful may be aided by her intercession with God. But the popular devotions go much farther, as is shown by such expressions as Gate of Heaven, Co-Redemptrix, our only Hope of Salvation.

Anything like direct invocation of the B.V.M. was unknown in the first centuries of the Christian Church, but in the 4th century the Collyridian heretics were charged with worshipping her. The oldest form of devotion to the B.V.M. is the Hail Mary, the first half of which—taken from the angel's salutation in the Gospel—was first used in the 7th century. The second half of it, which alone contains a direct prayer, is not known to have been used till the 15th century. In the 12th century the Crown of the Virgin, which consisted of 63 recitations of the Hail Mary (first half), came into use; while the Rosary (*q.v.*) dates from the 13th century, being commonly said to have been devised by S. Dominic in 1210. The practice of saying the Angelus—consisting of three Hail



Marys, a collect, and some versicles—morning, noon, and night, at the sound of the church bell, dates from the 14th century. At the Reformation, the invocation of the B.V.M. was abandoned by Protestants as unwarranted by Holy Scripture. See Angelus; Ave Maria; Mary; Rosary.

**Marion.** City of Indiana, U.S.A., the co. seat of Grant co. It stands on the Mississinewa, 70 m. N.E. of Indianapolis, and is served by rlys. and an airport. It was known as "queen city of the gas belt" when natural gas and then oil were discovered in the 1880s and '90s, but supplies of both were soon exhausted and the city turned to other industries, e.g. manufacture of glass, insulated wires and cables, electric stoves and lanterns, footwear, food products, flour, and paper. Settled about 1825, it became a city in 1889. Pop. 26,767.

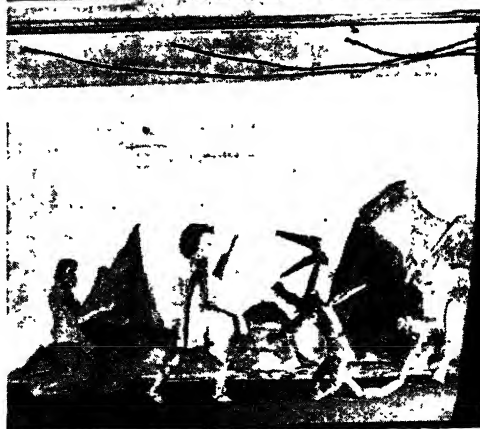
**Marion.** County seat of Marion co., Ohio, U.S.A. The city is 45 m. N.W. of Columbus, and is served by rlys. and an airport. Centre of a farming district, it has limestone quarries, rly. yards and shops, and turns out steam, gas, electric and Diesel shovels, dredges and conveying equipment, tractors, and agricultural machinery. Founded in 1821, it became a city in 1880. President Harding (q.v.) was associated with Marion from 1884 until his death in 1923, publishing *The Marion Star* before he entered politics; he is buried here, and his memorial is a mile to the S. Pop. 30,817.

**Marion Island.** One of a group of islands in the Indian Ocean. Situated in lat. 46° 27' S., and long. 52° 14' E., it is 1,200 m. S.E. off the coast of S. Africa. Marion is 12 m. long and 7 m. wide. It consists of a narrow shelf sloping steeply upwards to a snow-covered mountain 4,200 ft. high. The island is bleak and desolate, its level parts boggy and covered in lichen. Marion was discovered in 1772 by the French explorer Marion du Fresne, who erroneously believed it to be part of the Antarctic continent. It was visited in 1776 by Cook, who named it Prince Edward Island, after Queen Victoria's father, and claimed it for the British crown. Uninhabited until Dec. 30, 1947, it was then officially annexed by the Union of S. Africa. A weather forecasting station was set up, and the island has become strategically important as a base for air patrols over the Indian Ocean.

**Marionette.** One of the many types of dramatic figure included in the general term puppets. Marionettes are full length figures, in contrast to the bodiless sleeve or glove puppets of the Punch and Judy type. They are made of wood, metal, or plastic material, and are articulated in various ways so that they can perform the special movements required by their manipulator. They are controlled from above the stage on which they act by means of wires or strings, whereas glove and rod puppets are operated from below the stage level.

The origin of the name marionette is obscure, but marionettes are certainly of great antiquity. It is probably a diminutive of Mary, since small images of the Virgin, jointed and manipulated

like the present-day marionette, were known in the 16th century. There are records of marionette performances in ancient Greece as early as 420 B.C. China, Japan, India, Burma, and Java each has its traditional dramas. France, Germany, Italy, Sicily, Belgium,



Marionette. Boys of Beckenham and Penge County School rehearsing their puppet under-water ballet. Top, marionette show at the Grafton Theatre, London from the operator's view-point

and Russia have long been homes of the marionette. Each country has its own distinctive types and its own traditional plays and sets of characters, with their own peculiarities of dress and methods of manipulation.

In England marionettes were known in early times as motions. Shakespeare makes mention of them in several of his plays, and Ben Jonson in his *Bartholomew Fair* lays a riotous scene in a puppet booth. Cervantes in *Don Quixote* gives an almost similar scene in a marionette theatre. They were very popular also in

the 18th century. Powell, one of the most famous of English showmen, established his puppet theatre in the vicinity of S. Paul's, Covent Garden. There were also a number of famous English troupes in the 19th century. See *Puppet*; consult also *Histoire des Marionnettes*, C. Magnin; *A Book of Marionettes*, H. H. Joseph, 1920; *Everybody's Marionette Book*, Whanslaw, 1935.

**Mariotte, EDMÉ** (c. 1620–84). French physicist. Born in Burgundy, he became one of the original members of the Academy of Sciences in 1666. He carried out experiments to determine the height of the barometer, the motion of water through pipes, and other problems in hydraulics, and the composition of air, on which he published a book containing a statement of Boyle's law, which Mariotte discovered independently, and which is known in France as Mariotte's law. He died in Paris, May 12, 1684. See *Boyle*; *Gas*.

**Mariposa Grove.** Tract of land in Mariposa co., California, U.S.A. About 4 sq. m. in extent, it contains two groves of the *Sequoia gigantea*, or redwood, the largest tree having a circumference of 94 ft., and its main trunk a height of 200 ft. The road through the grove passes through an opening 9½ ft. wide, piercing the base of one of the trees. The tallest is 272 ft. high. The area is reserved as a national park. Mariposa is Spanish for butterfly.

**Maris, JACOB** (1837–99). Dutch painter. Born at The Hague, he studied first at The Hague Academy, and afterwards in Antwerp and in Paris under Hébert. At Paris he came under the influence of the Barbizon school (*q.v.*), and exhibited at the Salon, 1862–72. Returning to The Hague, he painted Dutch landscape, river scenes, and coast scenery, and



Jacob Maris,  
Dutch painter



Marionette. Reproductions from a Japanese print illustrating a head with the mechanism for moving eyes and mouth; arms and hands, with contrivance for working the fan; complete figure with movable head and limbs

By courtesy of The Marionette, Florence

died at Karlsbad, Aug. 17, 1899. His work is remarkable for its delicate rendering of atmospheric effects and its strong sense of design. The Drawbridge is in the National Gallery, London.

**Maris, MATTHEW** (1835–1917). A Dutch painter. Born at The Hague, he studied at the local art school, and later under Van Hove at Antwerp and Hébert at Paris. He developed a style and vision of his own, mystic, emotional, and irresistibly attractive. Montmartre, in the National Gallery, London, and *The Spinner* may be cited among his works. Several years he lived as a recluse in London, where he died Aug. 22, 1917.

**Maris, WILLEM** (1844–1910). A Dutch painter. Born at The Hague, he studied mainly under his elder brothers, Jacob and Matthew Maris. He is represented in the National Gallery, London, by a picture of Ducks, but most of his paintings are pastoral landscapes, executed with the freshness and vigour of the Dutch open-air school of the 19th century. He died in London in 1910.



Willem Maris,  
Dutch painter

**Marischal, EARL.** In Scotland, a high officer of state with duties similar to those of the earl marshal in England. Sir Robert Keith (d. 1346) was described as marischal to John Baliol in 1294, and about 1309 received a charter of the office of marischal of Scotland. The post became hereditary in the family of Keith, which in 1458 was raised to the peerage with the title of earl marischal. The office itself ceased to exist after the attainer in 1716 of George Keith, the 10th earl. See *Earl Marshal*.

**Marischal, GEORGE KEITH, 10TH EARL** (c. 1693–1778). Scottish soldier and politician. He succeeded his father in 1712, served under Marlborough, and on the death of Queen Anne was with difficulty restrained from proclaiming a military revolution in favour of the Pretender. He was dismissed, or retired, and, returning to Scotland, engaged in a Jacobite conspiracy, and fought at Sheriffmuir in 1715. He sheltered Prince James Edward in his house at Fetteresso, and after the rebellion escaped to the Continent, whereupon he was attainted and his estates forfeited. In 1719 he headed an abortive Spanish attempt to invade Scotland, and was defeated at Glenshiel. He made his way to the Hebrides, where he continued to intrigue against the government, but took no part in the rebellion of 1745.

Settling in Prussia with his brother, Marshal Keith he gained the friendship of Frederick the Great, who appointed him his ambassador in Paris. In 1759 he was pardoned by George II and returned to Scotland, but at the urgent request of Frederick returned to Prussia, where he became intimate with Voltaire, Rousseau, and other celebrities. He died May 28, 1778.



George Keith,  
10th Earl Marischal  
After P. Costanzi

**Marischal College.** One of the two colleges forming Aberdeen university. It was founded in 1593 by George Keith, 5th earl marischal, and, with the exception of a brief union with King's College in 1841, existed as an independent university until 1860, when it was united with King's College to form the present university of Aberdeen. The original college was rebuilt, greatly enlarged and improved in 1837–41.

and a still more important enlargement was carried out, 1895-1906, the new building being inaugurated by Edward VII in 1906, on the occasion of the celebration of the quatercentenary of King's College. Of the early marischal's original building hardly a fragment remains except the famous stone preserved in the vestibule, inscribed "They haif said; quhat say thay; lat thame say." The college, in Broad Street, occupies the site of the grounds and conventual buildings of the Grey Friars or Franciscan Monastery. See Aberdeen; Aberdeen University.

**Marissa.** Ancient city of S. Palestine, the modern Merash. It is near Tell Sandahannah, 15 m. N.E. of Lachish. The Biblical Mareshah (Josh. 15), its capture by Ptolemy I, 312 B.C., made it for three centuries a Hellenistic city, until finally destroyed by the Parthians. Apollophanes and other princes adorned their cave-tombs with unique painted friezes of animals and flowers. Macalister's excavations, 1900, yielded house-foundations and other archaeological remains.

**Marists** (from the name Mary). Roman Catholic congregation of priests and laymen devoted to parochial missions and retreats, and to educational and missionary work. The Congregation of Marist Fathers was founded at Belley, France, in 1816, and the Brothers were organized the following year.

The Marist Sisters received the formal approval of the pope in 1834. They undertake the care of the sick in hospitals and infirmaries, and conduct schools and orphanages.

**Maritain, JACQUES** (b. 1882). A French philosopher. Born Nov. 18, 1882, he was educated at Paris university, lectured at Toronto and Chicago universities, and was appointed to the chair of philosophy at the Institut Catholique, Paris. During the Second Great War he lived in the U.S.A., being appointed visiting professor of philosophy at Columbia university, 1940-41. He later returned to France, and became ambassador to the Holy See, 1945.

A leading exponent of the philosophical school of R.C. mystics, he occupied a high place in contemporary French literature. Of his many works, the best-known included *La Philosophie Bergsonienne*, 1914; *Art et Scolastique*, 1920; *Réflexions sur l'Intelligence*, 1923; *Religion et Culture*, 1931; *Les Degrés du*

Savoir, 1932; *Questions du Conscience*, 1938. *True Humanism*, 1938, was written in collaboration with Raïssa Maritain, herself the author of several volumes which were translated into English, e.g. *De la vie d'Oraison*, 1925; *Le Prince de ce Monde*, 1932; *L'Ange de l'École*, 1934.

**Maritime Alps.** Portion of the Western Alpine system extending N.W. from the Ligurian to the Cottian Alps. They lie on the borders of France and Italy, and include the passes of Col du Tenda and the Col della Maddalena, besides several other carriage roads. Their spurs reach the shores of the Mediterranean. The chief peaks are Cima dei Gelas (10,127 ft.) and Mont Monnier (9,245 ft.). For the French department of this name, see *Alpes-Maritimes*.

**Maritime Museum, NATIONAL.** Public institution at Greenwich. Opened in April, 1937, it occupies the Queen's House, originally built by Inigo Jones for Anne of Denmark, wife of James I, but not completed until the reign of Charles I. It contains a collection of paintings of naval interest, by such masters as Van der Velde, Gainsborough, Reynolds, Romney, Kneller, Lely, and Hogarth; models of famous British ships; and the personal relics of famous seamen. Other important exhibits are a Mercator globe, made 30 years before the geographer showed the world on a flat plane; and the "Silver Map of the World," a medallion illustrating Drake's voyage round the world. From 1821 to 1933 the building was occupied by the Royal Naval School.

**Maritime Provinces.** Name given to the three E. provinces of the dominion of Canada: Nova Scotia (*q.v.*), New Brunswick (*q.v.*), and Prince Edward Island (*q.v.*).

**Maritime Regiment.** Former unit of the British army, raised to operate A.A. defences of merchant shipping during the Second Great War. The first gun crews were trained in 1940, and the regiment established in 1941. Soon there were four regiments, officially part of the Royal Artillery, about 12,000 strong, mostly volunteers from the army. They wore an Admiralty badge, a red anchor with the letters A.A., but were paid by the army. At first they operated in home waters, but later went all over the world, and were disbanded in 1945. Maritime regiments of the 17th century were the forerunners of the Royal Marines (*q.v.*).

**Maritza.** River of the Balkans, the ancient Hebrus. It rises in the Rhodope Mts., in Bulgaria, flows E. past Philippopolis (Plovdiv), then S.E. to Adrianople (Edirne), where it receives its chief tributary, the Tunja (*q.v.*). Turning S., it forms the boundary between Greece and Turkey, to fall into the Aegean near Enos. It is 300 m. long, and is navigable for small boats to Adrianople.

**Mariupol.** A seaport of the Ukraine S.S.R. It is in the Stalino region, on the N. shore of the Sea of Azov, 65 m. W. by S. of Taganrog in the R.S.F.S.R., and is a rly. terminus. Iron and steel works are the chief manufactures of the city, which developed enormously before the Second Great War to support an est. pop. of 222,000. On October 14, 1941, Russian troops had to evacuate Mariupol after fierce fighting. It remained in German hands until it was recaptured, Sept. 10, 1943, after ten hours' bitter street fighting in which Don Cossacks played an important part.

**Marius, GAIUS** (157-86 B.C.). Roman general and statesman. Born at Cereatae, near Arpinum,



Gaius Marius,  
Roman general  
From a bust

of humble parents, he achieved the unique distinction of being elected consul seven times. His first military service was as a private soldier, and he showed conspicuous

bravery under Scipio Africanus in Spain, but not until 119 B.C. was he elected tribune, identifying himself with the popular party.

His next military service was against Jugurtha in Africa, as legate of the consul Metellus. Coming home while the campaign was in progress, he was elected consul, and returned to Africa in chief command, finishing the war with the capture of Jugurtha in 106. Meanwhile, grave danger menaced Rome from the N., vast hordes of Cimbri and Teutones having defeated the Roman armies sent to oppose their threatened invasion. All eyes turned to Marius as the one man who could save the city, and from 104 to 101 he was elected consul each year. The Teutones were completely defeated near Aquae Sextiae, and the Cimbri near Vercellae.

To further his political interests and obtain his sixth consulship,

Marius found it convenient to ally himself with two demagogues, Saturninus and Glaucia, but when they had proceeded too far with their revolutionary designs, he was forced into a position of hostility to them, and had to crush the insurrection they had provoked. The next 10 years proved comparatively quiet, but in the Social War (90-88) Marius rendered further services to the state. When war broke out with Mithradates, he was desirous of obtaining the chief command, but was passed over in favour of the patrician Sulla, who had a military force behind him. Marius was obliged to flee, and after several hair-breadth escapes he reached Africa.

Cinna had taken advantage of the departure of Sulla for the East to take up arms against the senatorial party, and Marius returned to Italy. Cutting off the food supply from Rome, Marius and Cinna entered the city, and the former was elected consul again. Their triumph, however, was stained by a terrible massacre of their opponents. Marius was to enjoy his consulship only for 18 days, dying Jan. 13, 86. Though scarcely a general of genius, Marius proved a most skilful leader. He was also a great army reformer, converting the old militia into a professional army, and introducing changes in equipment and organization. See Sulla; consult The Gracchi, Marius and Sulla, A. H. Beesly, 4th ed. 1884.

**Mariut**, **MAREUTS**, **MARYÛT**, or **MAREIA**. Lagoon in Egypt, separated from the Mediterranean by a narrow tongue of land on which Alexandria is built. It was navigable during the Middle Ages, but subsequently almost dried up. In 1801 the British cut the sand dunes at Aboukir, and the area was flooded.

**Marivaux**, **PIERRE CARLET DE CHAMBLAIN DE** (1688-1763). French author. Born in Paris, Feb.

4, 1688, he had little education, but showed literary capacity as a boy. His comedies, e.g. *Le Jeu de L'Amour et du Hazard*, 1730, are marked by a great deve-

lopment of emotional interest, and by an over-refinement of thought and style which came to be called "marivaudage." His novels, *Marianne*, 1731-42, and the unfinished *Le Paysan Parvenu*, give him a place in French fiction roughly analogous to that of Richardson in English. He died Feb. 12, 1763. Consult *Complete Works*, 12 vols., 1781; *Marivaudage*, A. Tilley, 1930.

**Marjoram** (*Origanum*). Genus of perennial plants of the family Labiatae. Several species are used as sweet and pot herbs. One is native to Great Britain, another was introduced from Crete in 1551. The shoots and stems of the sweet or knotted marjoram are gathered and dried, and used for flavouring purposes in cookery. *O. dictamnus*, otherwise known as dittany of Crete, is a rather tender species grown under glass.



Marjoram. Flower-head of *Origanum vulgare*

**Mark**. System of serial numbers used to denote differing types of the same article, especially in the armed forces. When a weapon or article of equipment is first brought into general use, it receives a serial number and the designation of Mark I. Modified types are allotted serial numbers and the designation Mark II, III, etc. The Lee-Enfield rifle, used by the British army before the No. IV was introduced, was Mark IV; tanks of the First Great War were Marks I, II, III, and IV; and aircraft were allotted mark numbers. German tanks were differentiated by marks.

**Mark**. Unit of German currency. Originally it was a silver bar of approximately  $\frac{1}{2}$  lb. weight that was marked, i.e. assayed. Current in Germany since the 9th century, it spread to Holland, France, Great Britain, and later to Spain, Portugal, Latin America, and Finland. Its name was given in 1871 to the new basic coin of the German empire, about the equivalent of the British shilling, subdivided into 100 pfennigs and minted in gold coins of 20, 10, and 5 marks, and smaller silver coins. The gold pieces were withdrawn during the First Great War. After the inflation of 1923-24, the depreciated currency was replaced by the Reichsmark (Rm) of officially identical value. For details of the new issue of marks, after the occupation of Germany in 1945, see N.V.

**Mark** (Lat. *Marcus*). Jewish convert to Christianity in the Apostolic age and writer of the second Gospel.



S. Mark, the evangelist From a statue by Donatello

If, as is probable, all the N.T. references allude to the same man, he bore the Hebrew name of John, was apparently a Levite of Cyprus, cousin to Barnabas, and son of a certain Mary who was prominent in the early Church at Jerusalem. He attended on S. Paul and S. Barnabas on their first missionary journey, but turned back at Perga, to the

displeasure of S. Paul, who, however, mentions him with affection in his epistles. Afterwards associated at Rome with S. Peter, who calls him his son, he is said to have acted as his interpreter, and to have received from him the facts embodied in the Gospel which bears his name. He is said to have died in Egypt. His festival is April 25, and his symbol is a winged lion.

**Mark**, **THE GOSPEL OF**. Earliest of the three synoptic gospels and the main source of the other two. The tradition that it was written by Mark goes back to very early times. Papias (c. 135) says, "Mark having become the interpreter of Peter wrote down accurately—but not, however, in chronological order—all that he remembered of the things which were said or done by Christ," and there is no reason to doubt the substantial truth of this assertion.

Mark is much shorter than the other two synoptists and omits much of the teaching of Jesus. It lays the emphasis on the works rather than on the preaching of Jesus. Hence many of the miracles are related at greater length and with more vivid detail than in the other Gospels. "In substance and style and treatment," says Westcott, "the Gospel of Mark is essentially a transcript from life. The course and issue of the facts are imaged in it with the clearest outline." It is generally held, on the strength of the testimony of Clement of Alexandria and Eusebius, that the Gospel was written at Rome. This hypothesis is supported by the presence of some



Pierre de Marivaux, French author

Latin words and idioms in the text. The date at which Mark was written cannot be determined with absolute accuracy. It is generally placed in the period 64-70, but it may have been composed about a decade earlier. Many modern scholars hold that the present Gospel was preceded by an earlier and briefer edition, and that the last 12 verses replace the original ending, now lost. See *Gospels, The Four*.

**Mark Antony.** The Roman soldier and statesman often known by this name is noticed as an historical person under Antonius, Marcus. As the hero of Shakespeare's tragedy Antony and Cleopatra, he will be found under that head. In Julius Caesar, however, he is called Mark Antony, and has the chief oratorical part in the play, delivering over Caesar's dead body the famous speech which opens, "Friends, Romans, countrymen, lend me your ears."

**Markesh, HESHVAN OR HESVAN.** Eighth month of the Jewish sacred year, and second month of the Jewish civil year. See *Calendar*.

**Market** (Lat. *mercatus*, trade). Place where goods are sold. In the Middle Ages the right to hold a market was one of the most valuable privileges that a king or lord could grant to a body of his subjects. Not only in England, but elsewhere in Europe, the growing towns secured by charter this right, which was jealously guarded, for the holding of a market was a source of considerable wealth to a town, while the king or lord received an income therefrom. In time every town of importance had its market, held on certain days and under certain conditions; hence the common phrase market town. Medieval markets were held in an open square in the centre of the town, therefore called the market place, and the chief buildings were put up around it. There on stated days vendors brought their wares and purchasers flocked to buy, a scene associated today rather with the word fair. The 11th century and onwards was perhaps the great age of the market, but in a sense it is almost as old as the human race, and ancient literature contains many references to markets.

Markets are still held, in the main on the days and in the places fixed in the past. They form an important source of revenue, sometimes to individuals, but more usually to municipalities, and large sums have been paid for them, as when the corporation of Manchester purchased the market rights from

the family of Mosley. In London there are a number of markets, certain classes of goods having their own, e.g. Covent Garden for fruit, and Billingsgate for fish, and the same principle prevails in other large cities. Most markets in Great Britain are now controlled by the municipalities, the power to establish them or buy them having been conferred on town councils and other bodies by an Act of 1875.

A more modern use of the word is for the whole of the transactions in a certain class of goods, e.g. the wool market, or the cotton market, refers to all dealings in those commodities, whether in London, New York, or elsewhere, and implies that there is only one price for the same article. Likewise the phrase money market covers all transactions in instruments of credit. Bankers, discount houses, and financial houses are said to form the money market. See *Billingsgate*; *Covent Garden*; *Credit*; *Fair*; *Leadenhall Market*.

**Market Bosworth.** Market town of Leicestershire, England. It is 12m. W. of Leicester and has a rly. station. The church of S. Peter is a Perpendicular building, and there is a grammar school, at which Dr. Johnson was an usher. In 1920 a sanatorium for the National Society of Operative Printers was erected near Wellsborough. Bosworth Field, 2 m. S., was the scene of the battle in which Richard III was killed, thus ending the Wars of the Roses, 1485. Pop. 1,100. See *Bosworth, Battle of*.

**Market Cross.** Stone structure surmounted by a cross, standing in a market place. It was originally a plain cross-shaft upon a stepped pedestal, used for sermons and proclamations, as at Taunton and Royat in Puy-de-Dôme, shelter for wayfarers being afterwards provided by a roofed edifice with a central finial. Sometimes a tiled gable-roof upon four plain pillars, as at Castle Combe, it developed into a polygonal structure with arched openings, groined vaulting, niched statuary, and other enrichments. Many cruciform finials were destroyed during the Commonwealth. Typical examples are at Salisbury, Chichester, Shepton Mallet, Malmesbury, Winchester, Cheddar, Leighton Buzzard, and North Walsham. The Edinburgh cross, removed in 1617, was replaced by another, whereof only the shaft remains. See *Cross illus*.

**Market Deeping.** A town of Lincolnshire, England. It stands on the Welland, 8 m. N.W. of Peterborough. The nearest station

is at Deeping St. James, 3 m. E. In the fen country, it is surrounded by reclaimed land under good cultivation. S. Guthlac's church is an old foundation. Pop. 876.

**Market Drayton.** Market town of Shropshire, England, known also as Drayton-on-Hales. It stands on the Tern, 18 m. N.E. of Shrewsbury, and is a rly. junction. S. Mary's church dates in part from the 12th century, and at the 16th century grammar school Robert Clive was educated. The town is an agricultural centre; ironfounding is another industry. It is thought to have been a British settlement. Near is Blore Heath, the scene of the battle of 1459. Market day, Wed. Pop. 5,100.

**Market Gardening.** Production of flowers, vegetables, and salads for commercial purposes, including their grading, packing, distribution, and marketing. Consideration of soil, aspect, and district is vital before establishing a market garden. The ideal soil is one which is easily worked and well drained, and has been enriched with sufficient organic matter. A market garden should be on land in good heart, and the subsoil as well as the surface should be regularly cultivated.

Mechanisation is increasing in market gardening, as in other forms of working of the land. Ploughing, disking, hoeing are often done by tractor, planting by machinery, watering by mechanical means, the produce is washed by an electrical washer, the soil is heated by electricity, etc.

A relatively small area of the surface of Great Britain is devoted to market gardening, yet the total sales of horticultural produce per annum exceed those from agriculture. Compared, however, with the market gardeners of some of the countries of the Continent, many of those in Great Britain do not pay sufficient heed to washing, cleaning, grading, and packing. A national advisory service of the ministry of Agriculture exists to assist the market gardener to improve both his crops and his methods of picking, packing, and grading. In some Continental countries, e.g. Belgium and the Netherlands, market gardeners have developed a high degree of cooperation in the production of clean, well grown, well packed produce which has given them great advantages in international, as well as their own, markets.

Presentation is very important, and the best market gardeners everywhere grade and pack their



produce perfectly. They also have their own coloured labels, or brands, or makes, so that their goods come to be asked for by name. Cooperative packing stations market goods under the brand-mark of the company.

A market garden is an agricultural holding for the purpose of the Agricultural Holdings Act if it is cultivated wholly or mainly for the purpose of the trade or business of market gardening. Further the tenant has in general the rights of the tenant of such a holding (see Agricultural Holdings). If it has been agreed in writing after Jan. 1, 1896, that the holding shall be let or treated as a market garden a tenant may obtain compensation for certain improvements to the holding and has at the end of his tenancy the same right to remove fixtures (if erected after Dec. 31, 1900) as a tenant of any other agricultural holding. He may also remove all fruit trees and bushes not permanently set out. The improvements referred to are: planting of fruit trees or fruit bushes, permanently set out; of strawberry plants, or asparagus, rhubarb, or other vegetable crops which continue productive for two or more years; and erection or enlargement of buildings. When a landlord will not agree that the holding shall be treated as a market garden, the local agricultural committee may direct that the tenant shall nevertheless be entitled

to compensation for such improvements. Market gardens, like other agricultural land, are exempt from the general rate.

A person who disposes only of surplus produce from his kitchen garden cannot class his holding as a market garden.

In Great Britain one customary method of marketing produce is to consign the goods to a commission salesman in a town or city market, who lends containers at an agreed charge. But before the Second Great War the best growers marketed most of their produce in non-returnable containers, which gave them complete freedom as to choice of the salesman and market for their goods. Sales can be made (a) direct to local customers; (b) by van deliveries in a nearby town; (c) to local shops, hotels, or res-

taurants, and (d) to a town or county wholesaler, who does not sell on commission, but gives a definite price. See Allotment; Kitchen Garden, etc., and under the names of various vegetable crops. Consult also Vegetable Culture, H. C. Davidson, 1939; Vegetable Growing Business, R. L. & G. S. Watts, 1939; Market Gardening as a Career, J. O. Baker, 1946.

**Market Harborough.** Market town and urban dist. of Leicestershire. It stands on the Welland, 16 m. S.E. of Leicester and 81 by rly. from London. It is also served by the Union canal. The church of S. Dionysius is a fine medieval building with a Decorated spire, and there is a 17th century grammar school. The old grammar school, on the market place, is an interesting survival. There are manufactures of patent foods, type, rubber goods, boots



Market Harborough arms



Market Harborough, Leicestershire. Market place and old schoolhouse, restored in 1883

and shoes, batteries, corsets, etc., and the town is a centre for the Fernie, Pytchley, and Woodland Pytchley hunts. Market day, Tues. Pop. 10,830.

**Marketing Board.** In Great Britain, a government organization for cooperative marketing. Marketing boards are set up either for a given commodity, e.g. the milk marketing board, or for a certain group of producers, e.g. the empire marketing board. Their objects are to rationalise supply and distribution, to set a standard of quality, and to obtain fair prices for producers. They undertake research on behalf of their members, and advertise their produce. To remove anomalies in distribution, they sometimes, as in the case of the milk marketing board, establish a pool to which all produce is

sold and from which distributors are supplied. The empire marketing board was established in 1926 on the recommendation of the imperial economic committee to develop trade between Great Britain and the empire, by carrying out market research in the mother country and popularising empire products through publicity campaigns; it was responsible for the national mark scheme for grading eggs, flour, malt products, home-killed beef, and certain fruits.

**Market Overt** OR **OPEN MARKET.** English legal phrase. As a rule, if a chattel is taken from its true owner, the latter still remains the owner, even as against a purchaser who has given full value for it in good faith. The exception is in the case of a sale in market overt, if the sale is according to the custom of the market. It must not be by night; nor in a room or place to which the public have not free access; it must be for valuable consideration; and the buyer must not know of the defect in the seller's title.

**Market Rasen.** Market town and urban dist. of Lincolnshire, England. It stands on the Rasen, 16 m. N.E. of Lincoln, with a rly. station. There is an old church dedicated to S. Thomas. Race meetings are held five times yearly. Market day, Tues. Pop. 2,048.

**Market Weighton.** Market town of the E. Riding of Yorkshire. It is 19 m. by rly. from York. It is connected with the Humber by a canal, and is an agricultural centre. Market day, Wed. Pop. 1,735.

**Markham, CHARLES EDWIN** (1852-1940). American poet. Born in Oregon, April 23, 1852, he passed his boyhood on a farm in California, became a school superintendent, and devoted much time to the study of literature and Christian sociology. In addition to his most notable volumes of verse, *The Man With the Hoe* and *Other Poems*, 1899, and *Lincoln and Other Poems*, 1901, he wrote *The Children in Bondage*, 1909, dealing with child labour, and *California the Wonderful*, 1914. A collected edition of his poems appeared 1927. Markham died March 7, 1940.

**Markham, SIR CLEMENTS ROBERT** (1830-1916). A British traveller and geographer. Born at Stillingfleet, July 20, 1830, he was educated at Westminster, and entered the navy in 1844. Promoted lieutenant in 1850, he went with the expedition for the relief of Franklin. In 1852 he left the navy and undertook a journey to Peru.



Observations in that country led him to introduce into India the cultivation of quinine-yielding cinchona trees, 1859-62. Appointed to the geographical department of the India office, 1867-77, he accompanied the expedition to Abyssinia, 1867-68. He was secretary to the Royal Geographical Society, 1863-88, and president 1893-1905; he held similar positions in the Hakluyt Society, 1857-87. Knighted in 1896, he died Jan. 30, 1916. Amongst his works are *Franklin's Footsteps*, 1852; *Travels in Peru and India*, 1862; *Richard Hakluyt*, 1896; *The Lands of Silence*, 1921.

**Markham, GERVASE** (c. 1568-1637). English author. Born at Cottam, Notts, he was a member of an old county family, and seems to have received a good education. He became a soldier, seeing service in the Netherlands and in Ireland, but afterwards passed his time in writing. Little else is known save that he died early in 1637 and was buried in S. Giles's, Cripplegate, London. He wrote poems and dramas, also books on horses and agriculture, including *A Discourse of Horsemanship*.

**Markham, Mrs. (1780-1837)**. Pseudonym of Elizabeth Penrose, British writer. She was born on Aug. 3, 1780, at Goadby-Marwood, Leicestershire, the second daughter of the Rev. Edmund Cartwright, inventor of the powerloom; and she married the Rev. John Penrose in 1814. Her *History of England*, begun in the first instance for her own children and published in 1812, attracted little notice at first, but eventually became the leading school history for a period of some 40 years. Her *School History of France*, 1828, likewise achieved remarkable success. She died Jan. 24, 1837.

**Markham, VIOLET ROSA** (b. 1872). A British social worker. Daughter of a Derbyshire coal-owner, she was born Oct. 3, 1872. She took an active part in the women's trade union movement, and her experience in the organization of women workers, and wide knowledge of industrial law, led to her appointment as deputy director of the women's section of the national service department in

1917. Made C. H., 1917, she was mayor of Chesterfield, Derby, 1927. Member of the industrial court from 1920, and of the assistance board from 1934 (deputy chairman from 1937), she retired 1946. She presided over the committee on welfare and amenities of serving women in the Second Great War, and reported on domestic employment, 1945. Her early books were about South Africa, and in 1929 she published *Romanesque France*. She married in 1915 J. Carruthers.

**Markhor** (*Capra falconeri*). Species of wild goat, found in Kashmir and Afghanistan. It is



Markhor. Specimen of the wild goat found in Afghanistan  
W. S. Berridge, F.Z.S.

readily distinguished from all other goats by its massive horns, which are twisted either closely like a screw, or open like a cork-screw. A fine specimen stands about 3½ ft. high at the withers, the chin-beard often reaches nearly to the knees, and the colour varies from greyish brown to nearly white. Markhors are found among the mountains at varying elevations, and their wary habits render them difficult to approach.

**Markievicz, CONSTANCE GEORGINA, COUNTESS** (1868-1927). Irish politician. Born Feb. 14, 1868, she was the eldest child of Sir Henry Gore-Booth, bart., of Lissadill, co. Sligo, and sister of the poet Eva Gore-Booth (1870-1926). She studied painting at the Slade and in Paris, where she met Count Casimir Dunin de Markievicz (d. Dec. 2, 1932), a Pole, whom she married in 1900. They eventually settled in Dublin, where she became prominent among the extremists of Irish politics. For her part in the Easter rising, 1916, she received sentence of death, commuted to penal servitude for life. Released 1917, she was again arrested 1918 in connexion with an alleged German plot. Returned

as Sinn Féin M.P. for S. Patrick's, Dublin, 1918-21 (first woman elected to the British house of commons), she never took her seat. An ardent republican, she opposed the treaty of 1921. From 1921 until her death, July 15, 1927, she represented Dublin City in the Éire parliament.

**Markinch.** A police burgh and parish of Fife, Scotland. It is 33 m. due N. of Edinburgh, and has a main line rly. station. Industries include paper making, bleaching, blanket weaving, and whisky blending. Pop. est. 2,500.

**Marking Nut Tree** (*Semecarpus anacardium*). Evergreen tree member of the family Anacardiaceae. A native of the East Indies, it is also called the kidney bean of Malacca. It has alternate, oblong, leathery leaves, and small, greenish-white flowers in terminal clusters. The nut or bean is enclosed in a hard shell, attached to a pear-shaped, fleshy, yellow receptacle, which is roasted and eaten. The unripe fruit yields a kind of ink, and the corrosive juice of the shell is used as an external remedy for rheumatism and as a wart cure. Mixed with quicklime, the juice forms an indelible stain used for marking ink.

**Markino, YOSHIO** (b. 1874). Japanese artist and author. Born Dec. 25, 1874, at Koromo, he settled in the U.S.A. in 1893. In 1897 he came to London, where he rapidly achieved a reputation for clever drawings and writings illustrative of British life. He published *A Japanese Artist* in London, 1910; *My Recollections and Reflections*, 1913; *My Forty Years in England*, 1940; and illustrated in colour a series of travel books.

**Markirch.** A town of Haut-Rhin dept., Alsace, France. It is 36 m. S.W. of Strasbourg, standing on both sides of the Leber, and is a manufacturing centre, various kinds of textiles being woven and prepared here. In the Middle Ages and until about 1800 rich mines of silver, copper, and lead were worked here, hence the other name of the town, St. Marie aux Mines.

**Markland** (Norse, wood land). Name given in 1003 by the Norse explorer, Thorfinn Karlsefai, to a forested land with great stretches of white sand, which he found in North America. The identity of Markland has been much discussed, but it may have been Newfoundland. The discovery is related in the Icelandic *Flatey Book*, trans. in *The Discovery of N. America* by the Northmen, N. L. Beamish, 1841.



Violet Markham.  
British social worker

ledge of industrial law, led to her appointment as deputy director of the women's section of the national service department in



Markova. British dancer who won international fame in ballet

**Mark Lane.** London thoroughfare. It runs from Fenchurch Street to Great Tower Street, E.C., and contains the two Corn Exchanges, the older dating from 1828, and the newer from 1881. A market was held here in the Middle Ages. In the Second Great War the W. side of the lane was mostly destroyed by German bombs. The station on the Metropolitan rly. was renamed Tower Hill in 1946.

**Mark Masonry.** Side degree of Freemasonry. To this degree, excluded from craft masonry by the act of union of 1813, admittance is still limited to master masons, although the organization is quite independent of United Grand Lodge. The Grand Lodge of Mark Master Masons was founded in 1856, and also controls the degree of Royal Ark Mariner, membership of which is limited to mark master masons. The office of the Grand Lodge of Mark Master Masons is in Great Queen Street, London, W.C. See Freemasonry.

**Markova, ALICIA** (b. 1910). British dancer. Born Alice Marks of Jewish parents in London, Dec. 1, 1910, she studied under Asta Neva, joined the Diaghilev company in 1924, and appeared in miniature ballets at the Ballet Club. With the Vic-Wells company, 1933-35, she became famous for her interpretations of the title-

part in Giselle and Odette in Swan Lake. She later founded a company in partnership with Anton Dolin (q.v.), and in 1938 appeared with the Ballet Russe de Monte Carlo. In the Second Great War she went to the U.S.A., dancing at the Metropolitan Opera House, New York, 1943-45.

**Marks, HENRY STACY** (1829-98). British artist. Born in London, Sept. 13, 1829, the son of a solicitor who turned coachbuilder, he was educated there, afterwards studying art in Paris. He first exhibited at the R.A. in 1853, becoming A.R.A. in 1871 and R.A. in 1878. He died Jan. 9, 1898. In early life Marks painted genre subjects, but later became well known as a painter of birds and pictures in which birds and human figures were strikingly associated.

**Mark System.** Name given to a system of landholding by which the land was held and cultivated in common by freemen, who managed their own affairs, and lived in self-governing communities. It was believed at one time that this was the usual method throughout Germany in the early centuries of the Christian era, and that it was brought to England by the Anglo-Saxons. This opinion is not now held widely. Some such system was very likely in existence in Germany and elsewhere, but not in the universal and rigid way that its advocates believe. The word is

shells of mollusca, contains 40 to 50 p.c. of carbonate of lime, and a small percentage of potash and phosphoric acid. Eocene or chalky marl may contain up to 95 p.c. of the carbonate, while Cretaceous marls are valuable for their high proportion of potash and phosphoric acid, though low in their percentage of lime. Marls are used as fertilisers and as improvers of peaty and acid soils. Marlstone is the name given to the argillaceous limestone of the Middle Lias. See Limestone.

**Marlborough.** Mun. bor. and market town of Wiltshire, England. It stands on the Kennet, 11



Marlborough arms

m. S. by E. of Swindon and 76 m. W. of London, and is served by rly. The church of S. Peter is a Perpendicular building. The Castle Inn is one of the most famous of the old coaching inns, for the main road from London to the W. ran through Marlborough, as does now the A4 road to Bath. There are a town hall and a 16th century grammar school. Marlborough College (q.v.) is a public school.

Marlborough was a settlement of the Britons and probably of the Romans. The Norman kings built a castle here, and their successors, especially Henry II, lived here occasionally, because it was convenient for the hunting in Savernake Forest. It became a borough in the Middle Ages, and was separately represented in parliament from 1295 to 1885. Market day, Sat. Pop. 4,600.



Marlborough, Wiltshire. The wide High Street of this ancient town, looking towards the Market Hall

derived from mark or march, a border district, one which the freemen are supposed to have cleared of forest and occupied. See Manor; Village Community.

**Marl.** In geology, sedimentary deposit which is a mixture of calcium carbonate, clays, and sands. The word is loosely applied to a large number of friable clays of widely differing composition, and though most contain calcium carbonate, many so-called marls are almost entirely deficient in it. Blue or shell marl, consisting largely of

Marlborough Downs is the name given to a range of chalk hills lying to the W. of the town. There are remains of British camps. Below the Downs lies Avebury (q.v.).

**Marlborough.** N.E. district of S. Island, New Zealand. Its area is 4,220 sq. m. It contains the two Kaikouras ranges, the highest peak being 9,462 ft., is well timbered and fertile, and the Wairau is its only navigable river. It exports wool, timber, hides, and tallow. Blenheim and Picton are its chief ports. Pop. 20,737.

**Marlborough, DUKE OF.** British title borne since 1702 by the family of Churchill. From 1626 to 1679 there was an earldom of Marlborough held by the family of Ley, John Ley being the lord chief justice and lord treasurer. When the 4th earl died, in 1679, the title became extinct. In 1689, however, it was revived for John Churchill, who, in 1702, was made a duke. He left no sons, and by arrangement his titles passed to his eldest daughter, Henrietta, wife of the 2nd earl of Godolphin, and on her death to Charles Spencer, 5th earl of Sunderland, the son of Marlborough's second daughter. From him the later dukes are descended, and to him they owe the name of Spencer. George, the 4th duke, as



Charles, 9th Duke of Marlborough  
*Elliot & Fry*

he is ranked, died in 1817, and his son, the 5th duke, in 1840. A younger son of the duke was made a baron in 1815. In 1902 the 3rd baron was made Viscount Churchill.

John Churchill, the 7th duke, a Conservative politician and the father of Lord Randolph Churchill, was lord-lieutenant of Ireland 1876-80. George, the 8th duke, was succeeded in 1892 by Charles, the 9th duke (b. 1871). He was under-secretary for the colonies, 1903-05, and parl. secretary to the board of agriculture, 1917-18. Dying June 30, 1934, he was succeeded by his son, John Albert Edward William (born Sept. 18, 1897), as 10th duke. The duke's eldest son is called the marquess of Blandford. *See* Blenheim.

**Marlborough, JOHN CHURCHILL, 1st DUKE OF.** English soldier. He was born probably June 24, 1650, of a good Dorset family, at Ashe, near Axminster. He entered the household of James, duke of York, as a page, became an ensign in the Guards, saw service at Tangier at the age of 16, won a colonelcy as the reward of courage and skill displayed under Turenne in the Netherlands, and then in 1678 married Sarah Jennings.

He held high command in the army of James II, but deserted him when William of Orange landed Nov. 5, 1688. William, on accepting the English crown, created Lord Churchill, as he already was, earl of Marlborough, and after the battle of the Boyne, June 30, 1690, left to him the conduct of a brief campaign in Ireland. The earl, however, now lost favour. Like most

other men of position, he was known by William to be intriguing with the exiled James II. The death of Queen Mary, however, Dec. 28, 1694, ensured Marlborough's loyalty, since it was entirely to his interest that the princess Anne should succeed to the throne. Accordingly he was reinstated in the favour of the king.

At the beginning of 1702, when war was on the point of breaking out, William selected Marlborough as the man who in his own absence should command the British and Dutch forces. William's death, March 8, 1702, placed Anne on the throne, and her accession confirmed the appointment of Marlborough. Hampered at every turn by the Dutch civilian commissioners whose assent was required to his military operations, and by perpetual intrigues at home, Marlborough nevertheless succeeded in manoeuvring the French out of one position after another, until he found his great opportunity in 1704.

Marlborough concerted his plans with Prince Eugene, arranged what was ostensibly to be a campaign on the Moselle, and then, before anyone suspected his intentions, swooped from the Rhine to the Danube, throwing himself between



*Marlborough*  
After Sir Godfrey Kneller

the French and Vienna, and won the overwhelming victory of Blenheim, Aug. 13, 1704.

But the duke—his earldom had been raised to a dukedom in 1702—was still prevented as before from reaping the full fruits of his victory. It was not until 1706 that his hands were freed and he was able at Ramillies, on May 23, to strike another crushing blow, the result of which was that within four months

the French were cleared out of Brabant and Flanders. In the next year, 1707, he had to leave war for diplomacy, wherein he proved himself no less a master by averting the threatened intervention of Charles XII of Sweden. In 1708 the Spanish Netherlands revolted against the Dutch domination which had resulted from the victory of Ramillies, and again the situation was saved by Marlborough's brilliant victory over the French at Oudenarde, July 11.

So extreme were the demands made by the Allies upon Louis XIV that France refused the terms of peace. A sanguinary victory was won over the French at Malplaquet, Sept. 11, 1709. But the French defeat was not a rout, and Malplaquet was the last of Marlborough's triumphs.

Marlborough was paralysed for action by the turn taken by political events in England, and in 1711 a direct attack was made upon him for misappropriating public moneys. But for partyspite his defence would have been conclusive; but in fact the issue of the attack was that he was deprived of all his offices and retired abroad. He was recalled on the accession of George I, Aug. 1, 1714; but his powers of mind and body were broken by a stroke of apoplexy in 1716, and he played no more part in public affairs. On June 16, 1722, he died, and was buried in Westminster Abbey.

Marlborough's name stands amongst those of the greatest of masters of the art of war known to history; the British army owes him an eternal debt of gratitude for his determined insistence on proper care and treatment for the men who were fighting the country's battles. As a diplomatist he was hardly less supreme than as a soldier. That he was grasping and avaricious, that he was perfectly capable of playing the traitor, even that he was guilty of treasonable acts, it is hardly possible to dispute. But the heaviest charges brought against him were never proved, and the presumptions are in his favour even when they were not definitely disproved. There is no Englishman who more decisively commands our admiration, no great Englishman for whom it is so difficult to feel a confident esteem. His character has been painted in the most unattractive colours by Macaulay. *See* Blenheim; Malplaquet; Oudenarde; Ramillies.

A. D. Innes

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**Marlborough, SARAH CHURCHILL, DUCHESS OF (1660-1744).** Daughter of Richard Jennings, of Sandridge, Hertfordshire,



Sarah Churchill,  
Duchess of Marl-  
borough  
After Lely

she was born on June 5, 1660. As maid-in-waiting to the duchess of York, she became intimate with the young princess Anne, a friendship which had important political consequences. In 1678 she married John Churchill, afterwards 1st duke of Marlborough, and the princess's adherence to the husband of her friend in his political misfortunes brought a quarrel with her mother. On Anne's accession the duchess of Marlborough received high favours and exerted great influence. Her adoption of Whig principles, her uncontrollable temper, and the increasing influence, used against Marlborough, of Mrs. Abigail Hill, led, however, to a breach between "Mrs. Morley" and "Mrs. Freeman," as the queen and duchess respectively called each other in private. Despite a temporary reconciliation, the duchess was finally dismissed from the court in 1710. She used her biting wit against Anne and the Tories, and in later life wrote a vindication of her husband and her own conduct. To the end she retained her vigorous and forceful personality, dying, Oct. 18, 1744. *Consult* Lives, A. T. Thomson, 1839; O. Colville, 1904; K. Campbell, 1932; F. Chancellor, 1932.

**Marlborough College.** English public school. Founded in 1843 for the sons of the clergy, it stands in large grounds in Marlborough. In 1853 it was thrown open to the sons of laymen. It is arranged partly on the hostel system and partly on that of boarding-houses. In college, on the former system, are about 430 boys, divided among eight houses, while outside are houses accommodating about 230 boys. There are scholarships to the school and the universities. The school is divided into lower, middle, and upper; there is also an army department.

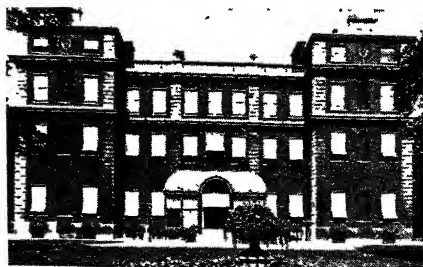
**Marlborough House.** London royal residence. Standing in a garden of four acres, between the S.W. end of Pall Mall and the Mall, it is of red brick, and was built by Wren in 1709-10 for the first duke of Marlborough, who died here in 1722, as did his

duchess in 1744. It was the residence, after his marriage to Princess Charlotte, of Prince Leopold, 1817-31; Queen Adelaide, widow of William IV, 1837-49; Edward VII, when prince of Wales, 1863-1901; George V, when prince of Wales, 1901-10; and Queen Mary, after the death of George V in 1936. It was the residence of Queen Alexandra in her later years. Marlborough House chapel, once connected with St. James's Palace, was built by Charles I. A memorial to Queen Alexandra, carried out in bronze by Sir Alfred Gilbert, occupies a site on the W. wall of the grounds.

**Marlinspike.** Pointed iron instrument used by sailors in knotting and splicing ropes. From 8 to 12 ins. in length, it enables knots that have jammed to be unfastened, the strands of a rope to be opened, etc. It often has an eye in the thick end for a lanyard.

**Marlow OR GREAT MARLOW.** Market town and urban district of Bucks, England. It stands on the N. bank of the Thames, 32 m. by railway W. of London. It has some manufactures, including paper, beer, and chairs, and is a boating centre. The church of All Saints is a modern building, and there is a 17th century grammar school founded by Sir W. Borlase. A suspension bridge crosses the river here. The royal military college, now at Sandhurst, was here until 1812. A tablet marks the house in which Shelley lived and wrote. Marlow was a borough in the 13th century. It was separately represented in parliament until 1885, and had markets and fairs in the Middle Ages. Pop. 5,087. Little Marlow is a village on the river, 2 m. away.

**Marlowe, CHRISTOPHER (1564-93).** English poet and dramatist. Born at Canterbury, son of a shoemaker and parish clerk, he was educated at the King's School in the cathedral city, and Benet (Corpus Christi) College, Cambridge, graduating M.A. in 1587.



Marlborough House, London, one of the royal residences. The main front, overlooking the Mall

Adopting free thought in religion, he abandoned the idea of a Church career to write for the stage in London. Here he was attached as playwright to the lord admiral's company. Shortly after a warrant had been issued for his arrest on some unknown charge, he was killed by Francis Archer, a serving-man, in a brawl near Greenwich, at the end of May, 1593, and was buried in the churchyard of St. Nicholas, Deptford.

His first tragedy, *Tamburlaine the Great*, a play in two parts, each of five acts, produced by Alleyn's company about 1588, introduced a pliant, rhetorical, passionate, and resonant form of blank verse ("Marlowe's mighty line," Jonson called it), which gave a permanent stamp and lasting impetus to English romantic drama. The *Tragical History of Doctor Faustus*, containing some of the finest poetry in the language, was produced a year later, being followed by *The Jew of Malta*, in which Alleyn appeared as Barabas; *Edward the Second*, which best exhibits its author's skill as a playwright and was the first Elizabethan historical drama; *The Massacre at Paris*; and the unfinished *Tragedy of Dido*, completed by Nashe. Marlowe's dramatic construction is faulty, and he created no heroine. His principal heroes are men of humble origin and exemplars of the superman: *Tamburlaine* typifies the will to conquer by physical force, and proved tremendously popular with an audience stirred by the defeat of the Spanish Armada; *Faustus* symbolises the lust of knowledge.

Marlowe, Shakespeare's chief creditor in the dramatic craft, may have collaborated with him in *Henry VI* and *Titus Andronicus*. His exquisite paraphrase of part of Musaeus's *Hero and Leander* was completed by Chapman and quoted by Shakespeare ("Who ever loved, who loved not at first sight?" in *As You Like It* (V, iii, 81-82)). As a poet Marlowe also lives in his pastoral lyric, *Come, live with me and be my love*. He translated Ovid's *Amores*, and the first book of Lucan's *Pharsalia*. No portrait of him exists, and no original edition of his plays (which display the work of no other hands) except that of Edward the Second. A memorial, by Onslow Ford, was unveiled at Canterbury by Irving in 1891.

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**Marmalade** (Port. *marmelo*, quince). Name commonly given to a preserve of Seville oranges. Originally a kind of quince jam, it is sometimes particularly designated orange marmalade, especially as other citrus fruits, e.g. lemon, lime, grapefruit, are now similarly preserved. See Jam.

**Marmalade Box** (*Genipa americana*). Popular name for the ever-green genipap (*q.v.*).

**Marmalade Tree** (*Lucuma mammosa*). Tree of the family Sapotaceae, native of S. America.



Marmalade Tree. Leaves and flowers. Inset, left, single flower; right, section of fruit

It has large leathery leaves of ob-long shape, 1-2 ft. in length, and small, solitary, whitish flowers. The fruit is more or less oval, 4-5 ins. long, with a rough, rusty brown skin, and a single seed embedded in a luscious, edible pulp, with a flavour akin to that of quince marmalade.

**Marmande.** Town of France, in the dept. of Lot-et-Garonne. It is 49 m. by rly. S.E. of Bordeaux on the right bank of the Garonne. It contains a fine Gothic 13th century church, and makes brandy and liqueurs, linens, and woollens. Pop. 12,101.

**Marmara** or **MARMORA**, SEA OF. The ancient Propontis, separating S.E. Europe from Asia Minor. It is connected with the Black Sea by the Bosphorus, and with the Aegean by the Dardanelles. With an area of 4,500 sq. m., it is 175 m. in length, and at its broadest is about 50 m. wide. It derives its name from its largest island, which is famous for marble quarries. Among its other islands is the

group called Princes' Islands. The strict control over the two passages to the Sea of Marmara imposed by the treaty of Sèvres in 1920 was relaxed in favour of Turkey by the Straits treaty signed in 1923 at Lausanne, and by the Montreux convention (*q.v.*). See Dardanelles, Attack on; Gallipoli; Turkey.

**Marmion**: A TALE OF FLODDEN FIELD. Second of Scott's metrical romances, published 1808. The poem is in six cantos, each prefaced by an epistle to a friend. Its story is that of the Scots war against Henry VIII which ended in the death of James IV and the destruction of his nobility at Flodden, Sept. 9, 1513.

**Marmolata.** Highest mountain of the Dolomites (*q.v.*). It lies in the Italian prov. of Belluno, 6 m. W. of Caprile. The N. slope is gradual, while the S. side descends precipitously. Of its peaks, Punta di Penia reaches over 11,000 ft., and Punta di Rocca 10,855 ft.

**Marmont**, AUGUSTE FRÉDÉRIC LOUIS VIESSE DE (1774-1852). French soldier. Born at Châtillon-sur-Seine, July 20, 1774, the son of a soldier, he entered the revolutionary army in 1791. Known to Napoleon as a fellow student, he became his aide-de-camp, served in Italy and Egypt, and was made a general. He held commands at Marengo and Ulm, after which, 1805-09, he was governor of Dalmatia and drove the Russians from Ragusa. In 1810 he took command in Spain, where, after capturing Ciudad Rodrigo, he was beaten at Salamanca. He appeared next in Napoleon's lost battles of 1814, after which he surrendered with 20,000 men under conditions that seemed treasonable. He was honoured by the restored Bourbons, whom he served after 1814, and in whose cause he became an exile in 1820. He lived in Vienna and elsewhere until his death at Venice, March 22, 1852. Marmont, who was made a marshal and duke of Ragusa by Napoleon,



Marmot. Specimen of the Alpine species, *Arctomys marmotta*  
W S Berridge, F Z S

wrote some volumes of Memoirs, published in 1856.

**Marmoset** (*Hapalidae*). Family of very small monkeys, found only in Central and S. America. They are



Marmoset. A pair of the lion variety from Brazil

placed at the foot of the sub-order which includes the monkeys, apes, and man; and in general form nearly approach the lemurs. They are somewhat squirrel-like in general appearance and size, are covered with thick fur, and have non-prehensile tails which are often bushy. The face resembles that of a miniature monkey, and many species have tufts or fringes on the ears. The feet and hands of the marmoset differ considerably from those of the monkeys proper, the toes and fingers being provided with claws instead of nails, except for the great toes. There are no cheek pouches and no bare callosities on the buttocks. In dentition also they differ from the rest of the monkeys. They live in the trees and climb about like squirrels. They are usually found in small companies, and their food consists of insects and fruit. In disposition marmosets are gentle and timid; they rarely live long in captivity.

**Marmot** (*Arctomys*). Genus of rodents, placed by zoologists in the same family as the squirrels. They are found in the N. portions of both hemispheres, and include numerous species. Very stoutly built, somewhat resembling rabbits, but without the characteristic ears and long hind legs, they range from 14 to 24 ins. in length. Their coarse fur is yellowish brown, and usually darker along the middle line of the back. Europe possesses two species, the Alpine marmot, now occurring in the Alps, Pyrenees, and Carpathians, but formerly of much wider range, and another



species, commonly known as the bobac, smaller in size, ranging from Germany and Poland across S. Russia into W. Siberia. Other species occur in Central Asia, and N. America has several, of which the woodchuck is perhaps best known. All marmots live upon seeds, roots, and leaves, move about in the daytime, and live in burrows, usually occupied by large colonies. Many species hibernate. See Woodchuck.

**Marne.** River of France. It rises in the Langres plateau and flows, in general, N.W. through Champagne to join the Seine at Charenton, a S. suburb of Paris. Its tributaries are the Ourcq, Saulx, and Ornain, on the right, and the Grand Morin and Petit Morin on the left. Over 200 of its 326 m. are navigable, and it forms part of the Marne-Rhine canal navigation, while the Haute Marne canal joins it to the Saône. The main stream and the tributaries in the neighbourhood of Meaux flow in trenches carved below the general level of the E. side of the Paris basin.

The battles of the Marne in 1914 and 1918 are described in a separate article. During the brief campaign of 1940, the Germans reached the Marne near Chateau-Thierry on June 11, and established bridgeheads on the S. bank next day. The French, faced with vastly superior mechanised forces,

were compelled to retreat from the line of the river. On Aug. 27, 1944, U.S. armoured forces reached the Marne near Lagny, meeting little opposition; next day formations crossed the river at Meaux and near Chateau-Thierry.

**Marne.** Dept. of France, formerly part of the prov. of Champagne. It lies contiguous with the depts. of Ardennes, Meuse, Haute-Marne, Aube, Seine-et-Marne, and Aisne. To the N. of the dept. are the wooded hills of the Reims district, but the chief physical feature is the bare, chalky tract known as the Champagne Pouilleuse. The Marne flows in a N.W. direction through the dept., other rivers including stretches of the Aisne and Aube, and numerous small tributaries of the Marne. The Aisne-Marne and Marne-Rhine canals are notable.

The principal product is champagne wine, but miscellaneous agriculture and fruit growing are also carried on; the industries include woollen manufactures, dyeing, chalk and marble quarrying, foundries, etc. The capital is Châlons-sur-Marne, and among other towns are Reims, Épernay, Ste. Menehould, and Vitry-le François. The dept. suffered severely in the First Great War, especially in the tract from Reims across the Camp de Châlons to Suippes. Area, 3,167 sq. m. Population 386,926.

On Sept. 4, Joffre ordered the Allied armies to assume the offensive on Sept. 6, to profit by the "adventurous" position of the German 1st army, and to concentrate against it the efforts of the Allied armies on the left. He called on his troops, if they found it impossible to advance, to "stand their ground at all cost and die rather than give way."

#### The Opening Phase

On Sept. 5, the artillery of the French 6th army opened fire on the Allied left, the German artillery replied, and artillery fighting continued all that afternoon. On the next day, a Sunday, the main battle began. During the night Kluck had ordered two of his four corps S.E. of Paris to march to the aid of his corps opposite the French 6th army, and during the day he also recalled the other two, thus leaving an enormous gap between his 1st army and Bülow's 2nd army, apparently in the belief that the British facing him were incapable of any action. The French 6th army meanwhile attacked northward from Meaux with great energy and gained ground in the face of deadly artillery fire. On their right the British advanced slowly across the forest of Crécy to the Grand Morin. The French 5th army forced the German 2nd army northwards across the Marne in prolonged fighting, bending in Bülow's right flank and threatening his whole position. The French 9th army could do no more than barely hold its position against great German attempts to break through, the 4th army was forced back slightly, while the 3rd army held the attacks of the German 5th generally in check, though losing ground S. of the Argonne.

#### Gap in German Front

On Sept. 7, Kluck's movement of his whole 1st army to the Ourcq imperilled the French 6th army. It was at this moment that Gen. Gallieni, recognizing the danger, hurried aid to that army in the requisitioned taxicabs of Paris. Meanwhile the concentration on the Ourcq of Kluck's entire force created that gap in the German front which proved fatal to their plans. The British, delayed by a German cavalry screen and by machine guns, thrust into the gap, reaching the Petit Morin after seizing Coulommiers. The 5th army pushed back Bülow's right some 6 m., and was also able to detach a corps to aid the 9th army, still violently attacked and

## MARNE: BATTLES OF 1914 AND 1918

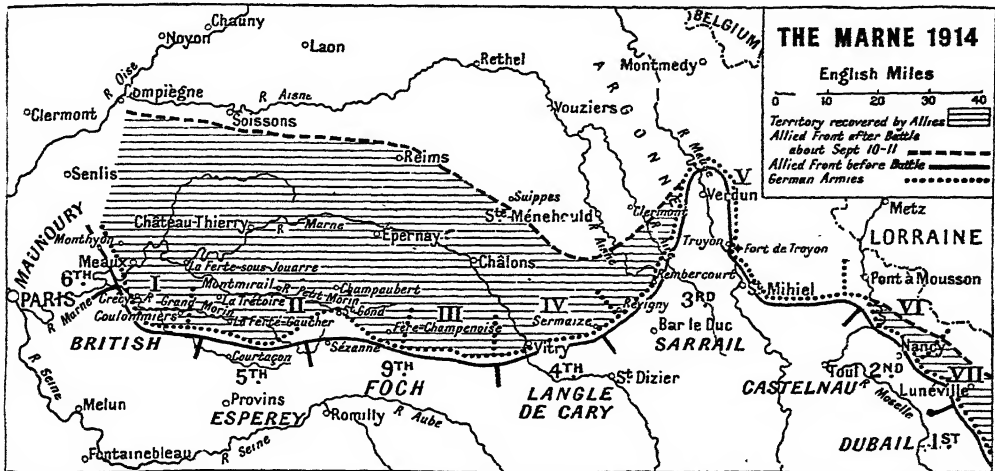
*Major battles of both the First and the Second Great Wars are described in detail in this Encyclopedia (see Aisne; Jutland; Somme; Ypres, etc.). This article deals with that battle which first arrested the German advance in 1914, and with two decisive and almost simultaneous Allied victories of 1918, one defensive, the other offensive. See First Great War*

The first battle of the Marne, fought Sept. 6-10, 1914, was one of the decisive battles of the First Great War, indeed of history. It marked the first check of the German forces after the initial impetus of their advance into France, and was their first decided defeat. This turning of the tide appeared at the time so inexplicable as to be almost miraculous.

Joffre, French C-in-C., had learned from airmen's reports that the German 1st army, under von Kluck, was marching from N.E. of Paris to a point E. of Paris to support the German 2nd army, under Bülow, in crushing the French 5th army. The German right flank was thus left exposed. The German 1st army commander, von Kluck, believed the British army demoralised, and did not

know of the new French 6th army assembling on his right flank nor of the new French 9th army in the Allied centre. The opposing forces from W. to E. were, on the Allied side, the French 6th army, the British army, and the French 5th, 9th, 4th, and 3rd armies, a total of 51 divisions; on the German side, the 1st, 2nd, 3rd, and 5th armies, totalling 40 divisions. Altogether, about 450,000 Germans faced about 600,000 Allied men at the outset of the battle. The Germans retained immense superiority in heavy artillery, aircraft, and equipment. But their communications were faulty; the Belgian resistance had dislocated their plan of campaign; and the unexpected vigour of the Russian attack in the E. had led them to divert two corps to that front.





Marne. Map showing how the German advance was arrested by the French and British armies, and the line forced back beyond Reims after the 1st battle

hard pressed, but holding its ground. The 4th army also held on, though its connexion with the 3rd was imperilled. The 3rd army was engaged fiercely, for the fall of Maubeuge that day set free a German corps and vital railways at a moment when German supplies and ammunition were low.

On Sept. 8 each of the opposing armies attempted to outflank the other; the British continued their advance, crossing the Petit Morin and violently shelling the Marne bridges; and the 5th army, crossing the Petit Morin, captured Montmirail, and widened the gap in the German front. The 9th and 4th armies were again violently attacked, yet held their ground, the 3rd even advancing slightly.

On Sept. 9 fresh German troops of Kluck's army continued to assail the French 6th, but Kluck was now in imminent danger of being enveloped on both flanks. At the critical moment the German staff lost heart, and ordered a general retreat to the Aisne. The retirement began that afternoon. It was accentuated all along the line on the following day, when Kluck's army was placed under Bülow. The Allies were soon in pursuit, in pouring rain. By Sept. 12 the Allies had advanced rapidly to the Aisne; the 9th army reached Épernay and Châlons, and on Sept. 13 occupied Reims; the 4th army seized Vitry-le-François; the 3rd army pushed up to the railway line from Verdun to Ste. Ménehould. The Germans were approaching or had actually reached the line which, after the ensuing 1st battle of the Aisne they were to fortify and

hold, with little change, until 1916. (See Aisne Battles.)

The net result of the battle was that the French armies, after a fortnight of defeat and retreat, had (with the British) taken the initiative, driven back the Germans 35 miles, and thus saved Paris and probably France. Certainly it put an end to German hopes of a speedy and victorious end to the war. French generalship was of a high order, particularly that of Gallieni. The British were criticised for the slowness of their movements, and Gallieni himself held that French cavalry should have exploited the victory more completely. German critics blamed both Moltke and the Kaiser for their defeat, first for withdrawing troops for the east; secondly for leaving a large force in Belgium; thirdly for attempting to break through at Nancy without a sufficiently large force for such an operation. The French claimed 38,000 prisoners, but no exact total of French casualties was given, as the figure of 300,000 published after the war included losses in the retreat and in the Lorraine battles of the same month.

#### Second Marne Battle

The second battle of the Marne was fought July 15-17, 1918, and began with a German offensive, following the earlier great German attacks which had been brought to a standstill on other parts of the front. The object of Ludendorff's attack was the capture of Reims, to be followed by a fresh offensive in Flanders which he hoped would end the war. The German force consisted (W. to E.) of the 7th, 1st, and 3rd armies (50 divisions). De-

fending the section were the 10th, 6th, 5th, and 4th armies, with strong U.S. forces intercalated on the French line.

Pétain, commanding the French, was well informed of the German plans, and withdrew the bulk of Allied troops from advanced positions on his 4th army front, leaving only strong, detached points which were to be held to the last. The attack, postponed for three days through bad weather, was planned by the Germans to open suddenly with artillery fire at 1.10 a.m. on July 15, the infantry beginning their storm at 4.30 a.m. But these plans were discovered by the French, who surprised the Germans by opening their own bombardment first, on the evening of the 14th. When the 7th German army crossed the Marne during the early morning, they were already weakened by heavy losses from shells and machine-gun fire. Only 3 m. S. of the river they struck the main French positions, meeting French and U.S. troops. The resistance of the U.S. 3rd div. disorganized the attack, and the advance here was checked, with enormous German losses. S.W. of Reims the assailants gained some important ground, but were unable to push on, as intended, to Épernay. On the French 4th army front the German bombardment wasted its shells on the advanced French positions. Reims itself was heavily bombarded, but French troops there, sheltered in vast wine cellars, suffered little.

Next day the French counter-attacked with great success, and at noon the German 1st and 3rd armies were ordered to suspend



studied art in Paris, where his Young Girl playing with a Dog, 1829, attracted some attention. He executed the relief of the battle of Jemappes on the Arc de Triomphe, made some successful statues, that of Emmanuel Philibert at Turin, 1833, being one of the best, and after the revolution of 1848 came to London, where he enjoyed a certain vogue. Two of his best known works in England are the statue of Richard Coeur de Lion at Westminster, and the Inkerman memorial in S. Paul's. He died at Passy, Paris, June 4, 1868.

**Marolles** OR **MAROLLES**. One of the square cheeses of France, with a brownish skin. It is small and heavy, made of whole milk and fermented, with a strong taste and smell, and semi-hard. It is made at Maroilles, in French Flanders, also in other places in N. and E. France, during winter and spring.

**Maronites**. A tribe of Syrian Christians, living mainly in the vicinity of Damascus. Converted to Christianity in the 8th century by a monk, John Maro, who became their bishop, they held the Monothelite heresy until 1182, when they joined the Church of Rome, only to leave it 200 years later. In 1445 they were reconciled to the pope. They are largely independent, elect their own patriarch, and retain their own liturgical usages. They have about nine bishops, and have been much persecuted by the Druses.

**Maroon** (Fr. *marron*, chestnut). Device used for producing a loud report. It is a cylindrical box of pasteboard filled with gunpowder, strongly bound with twine, and primed with quickmatch. Maroons were fired in London during the First Great War to give warning of imminent enemy air raids, and until 1938 marked on Armistice Day the beginning and end of the two minutes' silence. Traditionally they precede public displays of fireworks.

**Maroons**. Name given to certain negro inhabitants of Jamaica. It is an adaptation of the Span. *cimarron*, applied by the Spaniards to runaway slaves who escaped to the mountains (*cima*, mountain-top). On the expulsion of the Spaniards from Jamaica in 1658 their slaves took to the hilly interior, and were long a source of trouble to the British, who abbreviated the Spanish word into maroon. See Jamaica.

**Maros** OR **MURESUL**. River of Rumania. It rises in the Carpathians in the E. of Transylvania

and describes a great curve to the N. until, just above Deva, it flows W. to join the Tisza (Theiss) near Szeged. Below Nagylak it passes through Hungary. Its chief tributaries are the Aranyos (Auraru) and the Great and Little Küküllő (Tarnava). The chief towns on its banks are Arad, Deva, Karlsburg (Alba Julia), and Maros Vásárhely (Osorrei). It is navigable for small craft for half its length of 500 m., and its valley provides one of the two easy routes from the Alföld to the Transylvanian plateau.

**Marot**, **CLÉMENT** (1496-1544).

A French poet. He was born at Cahors, the son of a man of letters, and at the university of Paris studied law. He gave time to verse making, and was soon a member of the court circle. Francis I took a fancy to him, as did his sister, Margaret, duchess of Angoulême, and Marot was taken prisoner at Pavia when in the king's train. In 1526 he was arrested for heresy, and later his liberal ideas got him into trouble. In 1535 he took refuge in Italy, but soon abjured his heretical opinions and returned. He was again an exile, however, when he died at Turin. A popular translation of the Psalms, condemned by the Sorbonne, was one reason for his flight. As a poet Marot tried many styles, but excelled in the lighter and more familiar forms, his *chansons* being characterised by natural ease and courtly grace. His influence on French literature was considerable, for he was one of the first to break away from conventional poetic forms. His complete works were edited by P. Jannet, 1873-76.

**Marozia**. Italian princess of the 10th century. Daughter of Theodora and the consul Theophylact, she married successively Alberic, duke of Spoleto, in 906, Guido of Tuscany, and Hugo of Provence, king of Italy. Ambitious and unscrupulous, she deposed and put to death Pope John X in 928, and three years later installed her bastard son as pope. Calling herself Senatrix of the Romans, she maintained her rule until 932, when she was imprisoned by Alberic, her son by her first husband, and disappeared from history.

**Marple**. Urban dist. of Cheshire, England. It stands on the river

Goyt, on the borders of Derbyshire, and is also served by a canal and is a rly. junction, 12 m. S.E. of Manchester, of which it is practically a residential suburb. The chief industry is cotton manufacture. Market day, Fri. Population 12,270.

**Marpelate Controversy**. A literary dispute between the Puritans and the Established Church of England in 1588-90. It was started by a series of seven secretly printed tracts, signed Martin Marpelate, Gentleman; Martin Junior; and Martin Senior. The first appeared about Oct., 1588, and, with its fellows, was followed by replies in kind written by Thomas Cooper, bishop of Winchester, Thomas Nashe, John Lyly, and others. Martin appears to have been a scholar of Oxford, a theologian, and a man of means—possibly Job Throckmorton. The tracts employed satire, wit, railery, and racy gossip in attacking abuses in Church and state and the character of certain bishops. Archbishop Whitgift proceeded mercilessly against all suspected of complicity in their production and circulation, John Penry, the printer, being hanged in 1593. The secret press was carried on at East Molesey, Fawsley, Coventry, and Manchester, where it was seized in Aug., 1589.

**Marquand**, **JOHN PHILLIPS** (b. 1893). American novelist. He was born Nov. 10, 1893, and educated at Harvard. He published *Unspeakable Gentlemen* in 1922, and became known as a stylist with *Four of a Kind*, 1923, and later novels. The series of adventures of a semi-Oriental amateur detective, Mr. Moto, began in 1936 with *Thank you, Mr. Moto*; this character was a success on the screen when interpreted by Peter Lorre. Marquand's *The Late George Apley*, and H. M. Pulham, Esq., studies of Bostonian social types, were also filmed.

**Marquesas**. Group of French volcanic islands in the Pacific Ocean. They are 900 m. N.E. of Tahiti, N. of the Low Archipelago. Nukahiva and Hivaoa are the largest of the 13 islands, seven of which are inhabited; Resolution Bay, on Tahuata, and Port Jarvis, on Roapoa, are the chief harbours. The interiors are hilly and the cliff coasts render access difficult. Copra and pearl shells are the chief products. The S. islands were discovered by Mendaña in 1595, those to the N. in 1791 by Ingraham, who named them the Washington



Clément Marot,  
French poet



Marquesas. Natives of the islands

Islands. They have been French since 1842; and the French commissioner has his seat at Atuona on Hivaoa. Area, 480 sq. m. Pop. 2,699.

**Marquess** or **MARQUIS**. Title of nobility. Etymologically the same as *margrave*, count of the march (border), the word was not used in this sense in Great Britain, except occasionally for the guardians of the Scottish and Welsh marches. In the British peerage the title ranks between duke and earl; it was introduced in 1385 by Richard II, who made his favourite, Robert de Vere, marquess of Dublin.

**Marquetry** (Fr. *marqueter*, to inlay). Mosaic of ornamental woods, metals, or ivory, inlaid in furniture and smaller articles. In Venice, in the 15th century, caskets were inlaid with geometrical shapes of wood and ivory, and the Italian "intarsia" work of the 16th century was at first geometrical, and later developed into pictorial design. By the end of the 17th century marquetry in a number of intricate designs was being applied to Continental furniture. The English furniture makers of the 18th century employed it freely. Earlier marquetry was executed with woods of natural hues. Later, stained woods were employed, particularly after the discovery by a Frenchman named Boucherie of a process whereby wood could be stained to a considerable depth. See *Furniture*; *Inlaying*; *Mosaic*.

**Marquette, Jacques** (1637-75). French explorer. Born at Laon, he joined the Jesuits, and in 1666 was sent out to Canada. There he engaged in missionary work among the Indians who lived around the Great Lakes until, in 1673, he and Louis Joliet set out to explore

the Mississippi. Marquette died on a missionary journey, May 18, 1675.

**Marrakesh**. City of Morocco, the S. capital of the country. It is situated on the N. end of a fertile plain, about 4 m. S. of the river Tensift. It is surrounded by a wall, and contains many ancient but dilapidated buildings and several notable mosques, including the Kutubia or mosque of the scribes.

The sultan's palace stands outside the walls and covers about 200 acres. Standing within easy reach of the Atlas Mts. and commanding the trade routes to the S., its commerce was important, and it is still the centre of a large trade. Pop. 241,000.

**Marram Grass** (*Ammophila arenaria*). Perennial grass of the family Gramineae. Marram is a native of the sea-shores of Europe and N. Africa. It has a long, branching rootstock which creeps under the blown sand, and its numerous rigid stems, 3 or 4 ft. high, bear long, stiff leaves which are rolled up from the side. The flowers are grouped in a long, rounded panicle. This grass is most valuable on account of its work in binding the dry, shifting sands and forming the dunes, making them sufficiently stable for other sand-plants to cooperate in preventing the loose sand from blowing far inland.

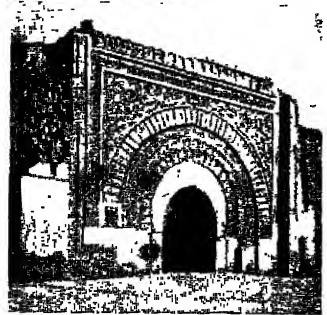


Marram Grass. Leaves and flowers of this perennial grass. Right, flower panicle and single flower

**Marriage** (Lat. *maritus*, husband). Union of man and woman sanctioned by the community. This social institution has the two-fold purpose of regulating sexual relations for the common weal, and establishing the status of the offspring. It serves to define the rights and obligations of the parties and their children, and to determine descent and succession to property and rank. In all stages of culture disregard of the procedure

imposed by custom is visited with social reprobation and attended by disabilities. When, in advanced

societies, it is regarded as a contract, and as such is formally sanctioned by the church or state, wedlock is not terminable at will but only by the mechanism of the accepted legal proceedings.



Marrakesh. Lower picture, Kasba gate in the city walls. Upper picture, Kutubia mosque

Monogamous union appears to have been the primeval foundation of the human family. Westermarck's minimum definition of marriage as a union lasting till after the birth of the offspring recognizes it as something more than mere mating. It involves living together for mutual helpfulness and protection, and the rearing of the family. The social instinct, no less than the parental, is rooted in the psychological life, and in its noblest aspect marriage is held to be a spiritual union.

The intercourse of near relatives is, almost without exception, regarded by mankind with abhorrence. Hence have arisen tables of affinity of varying extension within which marriage is prohibited. Aversion from the union of persons brought up together from infancy is innate, but is sometimes over-ridden by caste pride, as in the royal families of ancient Egypt and Peru. Even then the recorded cases of brother-and-sister marriage are mostly concerned with half-brothers and half-sisters.

Physical aversion or social disapproval tends to inhibit some unions which would be unattended by legal disabilities, such as those which offend against the law of

similarity. Among these may be classed those, marked by wide disparity of race, class, age, or religion, which are held to lack the essentials of domestic sympathy. Child-marriage, distinguishable from infant betrothal, may, as in orthodox Hindu circles, involve the deplorable sequel of perpetual widowhood.

The phenomena of courtship are observable among all peoples. Except in special circumstances the man is the wooer, and much freedom of choice occurs in the lowest as in the highest levels of culture.

#### Forms of Polygamy

Marriage is either monogamous or polygamous. Monogamy consists in the union of one man with one woman. Polygamy, which denotes plurality of husbands or plurality of wives, comprises three forms: polygyny, the marriage of one man with more than one woman; polyandry, that of one woman with more than one man; and the hypothetical communal or group-marriage, the sanctioned union of more than one man with more than one woman. Polygyny is widespread in human society, but where it occurs is usually practised only by men of power or means. The wives may be of co-ordinate rank, whether living together or in separate establishments; when a special status is accorded to the chief wife and her offspring, that of the other wives tends to pass into one of legal concubinage. Polyandry, of diminishing extent, survives in Tibet and among the Nayars of S. India.

**MARRIAGE CUSTOMS.** The manner in which the institution of matrimony reached the level of formal contract is best observed by reference to the customs which attend it. Various considerations led to an early stage to the formulation of rules binding men to find their wives either within their own social group, hence called endogamous, or outside it, thus giving rise to the principle of exogamy. An early form of exogamy was the forcible seizure of extratribal women, either singly, as with Persephone, or in the mass, like the rape of the Sabines. The tribe of Benjamin practised it both in battle and at village feasts (Judges 21). Marriage by capture may also be intertribal, often denoting an attack upon prescriptive clan-right. In some Australian tribes the captive is stunned; she may be abducted on horseback with pretended pursuit, as among the Yakut; there may be realistic fights among the relatives, as in the New Hebrides.

Marriage by purchase (*cf.* Ruth 4) is a widespread recognition of clan-right or family-right; the bride-price is a compensation for economic loss. It is based upon the local measure of value: mares in central Asia, reindeer among the Samoyeds, cattle in Bantu Africa, pigs in the New Hebrides, bead-money on the lower Congo, arrows among the Pygmies, shell-money in California. Marriage by service, as with Jacob and Laban, is a well-established variant. The servitude may precede marriage, as with the Chukchi, or follow it, as in aboriginal N. America. The latter is usually indistinguishable from *beena* marriage, the matrilocal custom of residence by the husband with the wife's people.

The dowry, as the converse of the bride-price, arises under social conditions that relieve the wife of the duty of economic labour. It is often given in kind, such as a cow among the Yugoslavs, or mats in Polynesia. In some communities it is indistinguishable from husband-purchase. It is normal in Aryan India and in modern Europe. *See* Betrothal Customs; Concubinage; Dowry; Family; Kinship; Society.

E. G. HARMER

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**Marriage Law.** Marriage is "the voluntary union for life of one man with one woman to the exclusion of all others." In England the law was consolidated in the Marriage Act, 1949. Before two persons can marry they must be at least 16 years of age; of sufficient mental capacity to understand the nature of the contract they are entering into; not within the prohibited degrees of relationship; physically capable of consummating the marriage, and not validly married to any other person. A marriage may take place (1) according to the rites of the Church of England; (2) in a nonconformist or R.C. church or other registered building; (3) in a superintendent registrar's office; (4) according to the rites of the Society of Friends or the Jewish faith. The necessary formalities differ in each case.

A special licence can be obtained from the archbishop of Canterbury which makes it legal for the marriage to be solemnised according to the rites of the Church of England without publication of banns, at any convenient

time and place, and not necessarily in a church. Special licences are, however, granted very rarely and usually only for the marriage of persons of public importance, the licences which are in common speech sometimes referred to as "special" licences being in fact not special licences but licences granted by a superintendent registrar (*see* below).

#### Church of England Marriage

Except where a special licence has been obtained, marriage according to the rites of the Church of England must be celebrated in a church of the Church of England either after publication of banns or on a common licence from the bishop dispensing with banns or on a certificate obtained from a superintendent registrar. If the marriage is by banns, these must be published on the three previous Sundays in the parish church of the parish or parishes where the parties live. They may be married in some other church of the Church of England which is the usual place of worship of one of them if the banns are also published there. Instead of banns, the parties may in exceptional cases obtain a common licence from the bishop of the diocese or a certificate from the superintendent registrar. To obtain a certificate 21 days' notice must be given to the superintendent registrar of the district or districts in which the parties must have resided for seven days. A marriage may be solemnised in a church with a certificate instead of banns only if the clergyman consents. A clergyman must not without just cause refuse to marry a parishioner; but he may, so long as the former spouse is alive, refuse to remarry a person whose previous marriage has been dissolved, whether the person to be married again was the guilty party or not, nor need he allow the use of his church for such a marriage. He may also refuse to marry a man and his deceased wife's sister, a man and his deceased brother's wife, or persons who are related as nephews or nieces by marriage; he must, however, in such cases allow his church to be used by another qualified clergyman if required.

A marriage in a church of the Church of England must be solemnised by a priest or deacon. There must be two witnesses. The use of the words of the marriage service is not essential, nor is the putting of a ring on the bride's finger. On the joining of the hands of the parties and the



pronouncement by the clergyman that they are man and wife, the marriage is complete so long as they understand that as a result of these acts they become married to one another, and to one another only, until death parts them. Marriages, other than those with a special licence, or according to the usages of the Society of Friends, or of the Jews, must take place between 8 a.m. and 6 p.m.

Marriages in nonconformist and R.C. churches and other buildings registered for the solemnisation of marriages may be performed on a superintendent registrar's certificate, or on a superintendent registrar's certificate with licence. A certificate with licence can be obtained one whole day after the notice of marriage has been given; 15 days' prior residence by one of the parties is necessary. The registrar of marriages may be required to attend the ceremony. Two witnesses must be present, and the marriage must be solemnised with open doors between 8 a.m. and 6 p.m. Any religious ceremonies may be used, but each party must state that he or she knows of no impediment to the marriage and must say to the other: "I call upon these persons here present to witness that I, A.B., do take thee, C.D., to be my lawful wedded wife [or husband]," or "I, A.B., do take thee, C.D., to be my wedded wife [or husband]."

#### Marriage at Registrar's Office

Marriage may also take place at the office of the superintendent registrar on a superintendent registrar's certificate or certificate with licence. Two witnesses and open doors are required, the same words as those necessary at a marriage in a nonconformist church are used, and the ceremony must take place between 8 a.m. and 6 p.m. No religious service may take place at the superintendent registrar's office, but the minister of a nonconformist church or other religious body to which the parties belong may, if it is so desired, later celebrate a marriage service at his church. Such a service, however, is not a necessary part of a civil marriage ceremony.

During the Second Great War, some of the above rules as to notice and place were relaxed for the benefit of members of the armed forces who were frequently moved at short notice from one part of the country to another.

Where a person is under 21 and is not a widow or widower, the consent of the parents or guardian

is required to the marriage. If such consent is refused an application for consent can be made to the court, usually the magistrate's court. Failure to obtain consent of parents, guardian, or magistrate may make the parties liable to prosecution, but does not invalidate the marriage.

Where one of the parties is a Friend or where both are of Jewish faith the marriage may be solemnised according to the rites of these bodies on a superintendent registrar's certificate with or without a licence. The rules of English law as to open doors, the presence of witnesses, and the permitted hours do not apply.

#### Scotland and the U.S.A.

In Scotland marriages are either regular or, now in very rare cases, irregular. The irregular marriages (which were fully valid), made whether at Gretna Green or elsewhere in Scotland by mere declaration without notice or ceremony, were abolished in 1939. A regular marriage is one celebrated by a minister after banns or publication of a notice in the registry. Marriage may also take place on a sheriff's licence or after notice before a registrar. The consent of parents is not required for persons under 21.

U.S.A. Marriage laws in the U.S.A. differ from state to state. The age for marriage with consent of parents or guardian ranges from 14 for males and 12 for females in Idaho, Maine, Michigan, Mississippi, and New Jersey, in which states common law prevails, to 18 for males and females in West Virginia; age without consent varies from 18 to 21 for men and for women. Blood tests for the male only are required in Alabama, Louisiana, and Texas, for both parties in California, New York, Pennsylvania, Virginia, and 28 other states. There is no period of waiting before or after the issue of a licence in most states; five days is the longest term of waiting imposed. Common law marriages, without licence or ceremony, if they have lasted a year or more, are validated in most states. In the South, and some of the other states, marriage between whites and negroes is unlawful; and in some marriage between whites and Indians. See Divorce.

**Married Woman's Property Acts.** English laws for the protection of married women, which began with the Married Woman's Property Act of 1882. By common law a husband on marriage before that date became entitled to all the

personal property which the wife then had or later acquired, and had also extensive rights over her other property. His rights extended even to her earnings. Apart from a few exceptional cases, a married woman could not validly enter into any contract. The ingenuity of conveyancers had done something to mitigate the hardship of the rules relating to property, but this Act, which came into force on Jan. 1, 1883, stated that a woman married after that date should be entitled to hold as her separate property any real or personal property. She was also given the power to make contracts. In 1935 it was provided that a married woman should hold property in the same manner as an unmarried woman, and restrictions on anticipation were abolished in 1935 and 1949. The Act of 1882 left a husband liable for his wife's ante-nuptial debts to the extent of any property he acquired through her, and also for any tort committed by her; these liabilities were not removed until 1935.

**Marriott, Sir John Arthur Ransome (1859-1945).** British historian. From Repton he went to New College, Oxford, where he was appointed to a lectureship in 1884. Secretary of the university extension delegacy, 1895-1920, he became a fellow of Worcester College in 1914. He was Conservative M.P. for Oxford City, 1917-22, and for York, 1923-29, serving on several financial committees. His special studies were the Eastern question in modern diplomacy, 19th cent. European history, and the growth of the British Empire. His publications include *The Mechanism of the Modern State*, 1927; *A History of Europe from 1815 to 1923*, 1931; *Commonwealth or Anarchy*, 1937; *The Evolution of the British Empire*, 1939; *Anglo-Russian Relations*, 1944. Marriott died June 6, 1945, and his *Memoirs of Fourscore Years* appeared in 1948.



Sir John Marriott,  
British historian

**Marrow.** Soft tissue found in bone. Red marrow occupies that part of the bone which is made up of spongy tissue. It is very vascular, and contains certain cells, known as erythroblasts, from which the red corpuscles of the blood are developed. Yellow marrow consists chiefly of fat cells, and



fills the medullary cavity in the centre of the shaft of long bones.

**Marrow.** Plant of the family Cucurbitaceae, better known as Vegetable Marrow (*q.v.*).

**Marrow Controversy.** Dispute in the Church of Scotland. Arising in 1718, it led finally to the formation of the Secession Church. It was named after The Marrow of Modern Divinity, 1644, by Edward Fisher, an English Calvinist, and was caused by the republication of this work in 1718, with a commendatory preface, by the Rev. James Hog of Carnock, the book being attacked and condemned as antinomian. *See* Presbyterianism; Church of Scotland.

**Marrucini.** Tribe of ancient Italy. They lived on the E. coast and came into notice in 315 B.C. as a member of an alliance formed to fight against the Romans. They then became allies of Rome, but soon disappeared from history.

**Marryat, FREDERICK** (1792-1848). British novelist and sailor. Born at Westminster, July 10, 1792, he was the son of Joseph Marryat, who had interests in the W. Indies. In 1806 he entered the navy and was at first under Lord Cochrane, afterwards earl of Dundonald, who appears in Peter Simple as Captain Savage. He saw service in European and American waters, before the peace of 1815. He held a command during the Burmese War of 1824-25, and retired in 1830. Made F.R.S. for his work in improving signalling, he is credited with several rescues of life. He died at Langham, Norfolk, Aug. 9, 1848.

Marryat turned his experiences to good account in his numerous stories of nautical life. He began with Frank Mildmay, 1829; and went on with Newton Forster, 1832; Peter Simple, 1834; Jacob Faithful, 1834; Mr. Midshipman Easy, 1836; and Snarley Yow, or The Dog Fiend, 1837. Some of these attained remarkable popularity, especially among boys. Several appeared first in The Metropolitan Magazine, which Marryat edited 1832-35. His later books include Masterman Ready, 1841; The Settlers in Canada, 1844; and The Children of the New Forest, 1847. His daughter Florence (1838-99), herself author of some 70 novels, published his Life and Letters, 1872.



Captain Marryat,  
British novelist

**Mars.** In classical mythology, the Italian god of war and agriculture, whom the Romans subsequently identified with the Greek Arēs. He was extensively worshipped by the Romans, who claimed him as the father of their founder Romulus. He was the god of the year, March being his special month. The Campus Martius or field of Mars, where stood an altar to the god, was the recognized place of exercise for the youth of Rome. He was also known as Gradivus and Quirinus. *See* Arēs.

**Mars.** First of the superior planets. Its mean distance from the sun is 141,710,000 m., and its



Mars. Telescopic photograph of the planet taken at the Mount Wilson Observatory, Pasadena, California

orbit is extremely eccentric. The mean diameter of the planet is 4,213 m.; its year 1·88 of our years, or 687 days; and the Martian day 24 hours, 37 mins., 23 secs. The mass of Mars is little more than one-tenth that of the earth (0·108), and its mean density as compared with the earth is 0·70. The tilt of Mars, or the angle between the plane of the planet's equator and the plane of its orbit, is 25° 12', and it has an analogous division of seasons to the earth's, though they are longer. Mars has two moons, Deimos and Phobos, the discovery of which in 1877 was predicted by Swift in Gulliver's Travels. They are very small, Phobos perhaps 10 m. in diameter, Deimos 5, and they revolve about Mars in 7 hours, 39 mins., and in 30 hours, 18 mins. respectively.

The determination of the elements relating to the orbit and mass of the Martian system has been exact enough to leave few loopholes for inquiry, but speculation has been busy about the constitution of Mars. Its ruddy colour, which fades to yellow and reddish brown in the telescope, was formerly thought to be due to the great density of its atmosphere, but is now believed to be due to oxidation of the surface rocks.

Modern observation and mathematical theory show that the planet's atmosphere is in quantity much less than that of the earth. It has clouds, which, according to observations by Pickering at the opposition of 1916, always lie over the so-called desert regions. Their existence was first noted by Lockyer in 1862, but for many years this was denied on the ground that there was no proof of the existence of water vapour on Mars. The spectroscope shows that the amount of water vapour to be found is not 1 p.c. of that on the earth.

In 1877 Schiaparelli discovered what he called channels, but described more usually by others as canals, extending from the darker patches on Mars over the lighter ones. This discovery gave rise to the conjecture that these channels were actual irrigation canals, by which the melting of the polar snows on Mars, of which there is visual evidence, might be made available for watering the desert regions.

This theory was supported by Lowell, whose drawings show the planet covered with a complex geometrical network of canals, meeting at so-called oases. Other equally good observers have failed to see the canals, and it is generally believed that, though much fine detail exists, the appearance of geometrical precision is suggested by factors that are subjective. Photography cannot yet decide the point, for even with the biggest telescopes exposure times running into seconds have to be used, during which atmospheric tremor can obliterate fine detail even in good observing conditions. Possibly some low form of vegetation could live in the dry atmosphere and cold nights (−110° F.) of Mars, but the existence of animal life is dubious. *See* Astronomy; Lowell, P.; Planet; Solar System.

**Bibliography.** La Planète Mars, C. Flammarion, 1892; Mars and Its Canals, P. Lowell, 1906; Mars as the Abode of Life, P. Lowell, 1908; Life in Other Worlds, H. S. Jones, 1940; Earth, Moon and Planets, F. Whipple, 1941.

**Marsala.** Wine produced in the neighbourhood of, and exported from, Marsala, Sicily. An old and flourishing industry is based on the product of extensive vineyards in W. Sicily. A white, sweet, strong wine, Marsala resembles Madeira, but has a distinctive, pleasing flavour and golden colour, with a high percentage (average 22) of alcohol.

**Marsala.** A seaport of Sicily, Italy, in the prov. of Trapani. The most westerly point, 19 m. by rly. S. of Trapani, it is the centre of a wine producing district, and exports quantities of Marsala wine. It is built on the site of the ancient Lilybæum, a Carthaginian stronghold, which fell to Rome, 241 B.C. Garibaldi landed here from Genoa, May 11, 1860. During Allied operations in Sicily in the Second Great War troops of the U.S. 7th army took the town from the Italians on July 23, 1943. The civic museum was almost completely destroyed. Pop. 31,000.

**Marschall von Bieberstein, ADOLF HERMANN, BARON (1842-1912).** German statesman. Born at Karlsruhe, Oct. 12, 1842, he became a lawyer and was public prosecutor at Mannheim, 1865-75. Then he was elected to the Baden chamber of deputies, becoming a member of the Reichstag in 1878. On forming his cabinet in 1890 Caprivi made Marschall secretary for foreign affairs, in which capacity he exercised skill in dealing with the Kaiser's interference in state affairs. In 1897 he was appointed ambassador to Constantinople, and largely owing to the influence he acquired over Abdul Hamid Germany gained prestige in Turkey and the concession to build the Bagdad rly. Marschall died at Badenweiler, Sept. 24.

**Marschner, HEINRICH AUGUST (1795-1861).** German conductor and composer. Born at Zittau, Aug. 16, 1795, he studied law, but having a gift for music, soon turned to it professionally. He became acquainted with Beethoven, at whose suggestion he wrote his first opera. In 1823 he became a conductor at Dresden, and later was director of music there, and at Leipzig and Hanover, where he died Dec. 14, 1861. Marschner's greatest opera is *Hans Heiling*.

**Marsden Square.** Term applied to a map-making system devised by Marsden in 1831. A Mercator chart of the world is proportioned into squares of 10° latitude by 10° longitude, and numbered accordingly. Each area is further subdivided into 100 smaller squares 1° by 1°. The latter are allotted numbers from 00 to 99, so that the first figure, in conjunction with the main square, represents latitude and the second longitude. This system is used in charting meteorological data over ocean areas.

**Marseillaise, La.** The national hymn of France since the period of the Revolution. It was written in

1792 at Strasbourg by a young officer of engineers, C. J. Rouget de Lisle, and received its name after having been sung by a party of revolutionaries from Marseilles on their entry into Paris, and again during the attack on the Tuileries. It was prohibited under the Bourbon and Bonaparte régimes, owing to its inflammatory effect on the people, who had adopted it as their rallying cry. The original version, in which the source of several modern variants can be traced, ran thus:

### LA MARSEILLAISE

Rouget de Lisle



Al - lons en fan - ta - si - e, Le jour de gloire est ar - ri - vé. Con - tre nous de la ty - ran - ni - e Lé - ten - dards sang - lant est le - vé, l'é - ten - dard sang - lant est le - vé. En ten - dez vous dans ces cam - pa - gnes Mu - gir ces fé - ro - ces sol - data. Ils vien - nent jus - que dans vos bras E - gor - ger vos fils, vos com - pa - gnes! Aux ar - mes, ci - to - yens! for - mez vos ba - tail - lons. Mar - chez, mar - chez, qu'un sang im - pur A - breu - ve nos ail - lons.

*La Marseillaise.* Original version of the French national hymn, reproduced from an old score. It varies slightly from the version now in use.

**Marseilles** (Fr. Marseille). The second city and greatest seaport of France, and also of the whole Mediterranean. Capital of the dept. Bouches-du-Rhône, Marseilles is situated on the most favoured spot of the Mediterranean coast, in a huge bay surrounded by hills and protected by a range of small, rocky islands. Far enough from the delta of the Rhône river not to have its basins silted up, near enough to exploit the natural trading road of the Rhône valley, Marseilles covers a huge territory—larger than the area of Paris—along the coast. It was one of the world's most picturesque cities until, in January, 1943, its famous old port and the surrounding quarter—mostly huge,



Marseilles arms

*bouillabaisse*, was the principal dish offered.

From the old port the principal street of Marseilles, the impressive Cannebière, started up a gentle slope. A few yards away were the slums, thieves' dens, and brothels of a big harbour town. Before the Second Great War, the population included 125,000 Italians, 22,000 Spaniards, 22,000 Armenians, Turks, Lebanese, Greeks, Russians, Swiss, and numerous coloured citizens of French colonies, all registered as French. Fully half the Marseilles population at that time hailed from other countries, a fact which contributed to its rapid growth (1801, 90,500; 1872, 313,000; 1926, 652,600; 1932, 803,230). The new port, begun in 1844, had 11 basins, one, Madrague, connected with the Marseilles-Rhône canal, and was used annually by 8,000-9,000 vessels of



Marseilles. 1. Quai des Belges with Notre Dame de la Garde on the hill in the background. 2. Fort St. Jean at the entrance to the old port. 3. Aerial view of the docks showing the National and La Pinade basins

a total tonnage of some 15 million tons: goods handled weighed 7-10 million tons.

Rlys., connected with the port partly by tunnels, linked France, Germany, Switzerland, etc., with Italy and Spain; a great airport for land- and seaplanes on the lake of Marignane, 12 m. N.W. of Marseilles, and a service of bus lines, especially along the Riviera coast, further enhanced the dominating position of the city. As a fortress, and the seat of the medical and science faculties of the Aix-Marseilles university, of legal, colonial, etc. schools, of an observatory, zoological and botanical gardens, libraries (one of which held 112,000 vols., 145 incunabulae, and 1,689 manuscripts), Marseilles plays a rôle in France's intellectual and public life; its industries, especially its famous soap, but also chemical, glass, ship-building, and engineering works, are important, though less so than its trade.

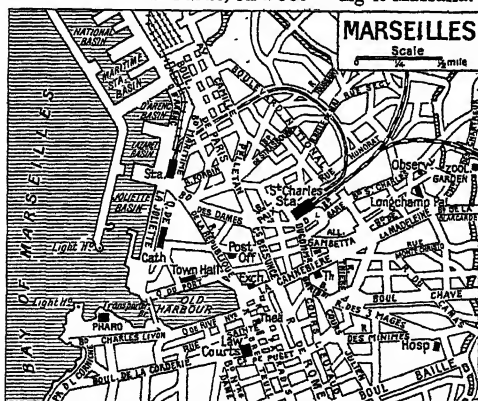
One of Europe's oldest cities, Marseilles is nevertheless essentially modern. Its most impressive buildings—the palais de Longchamp, containing several museums; the Byzantine cathedral near the old port; and the church of Notre Dame de la Garde, on a 300-

ft. hill, with a 150-ft. tower carrying a 30-ft. gilded statue of the Virgin visible from far out to sea—all date from the middle of the 19th cent. Among ancient buildings, the church of St. Victor, 10th to 13th, Notre Dame du Mont Carmel, 13th, the town hall, 17th, and the Grand Théâtre, 18th cent., are the most important. The beautiful promenade de la Corniche, along Marseilles's hilly promontory, the fashionable avenue du Prado and several boulevards, with their colourful life, are among the city's attractions. Pop. (1946) 635,939. The history of Marseilles goes back to about 600 B.C. when Ionian Greeks settled here, calling it Massalia. It was an aristocratic republic, mother of such towns as Antibes, Nice, Monaco, and Arles; later allied with Rome, it was annexed, 49 B.C., by Caesar, and called Massilia. Though long remaining a centre of Greek civilization, it was successively taken by Visigoths, Ostrogoths, and Franks between the 5th and the 9th cents., was attached to Lower

Burgundy—Arelat—in A.D. 879, and regained independence 1212-16. It fell to Charles of Anjou 1246, to France 1481, but refused recognition of the crown until 1596. Its last privileges were abolished by Louis XIV in 1660. During the French Revolution it sided with the Girondists against the Jacobite terror, but was subdued. It regained its importance in consequence of France's conquest of N. Africa and the opening of the Suez canal. Traces of its ancient history, from Phoenician, Egyptian, Greek, Roman, and its early Christian days—it was a bishopric from A.D. 420—to the Middle Ages, are carefully preserved in its archaeological museum.

During the Second Great War Marseilles lay in the unoccupied zone of France from June, 1940, to Nov., 1942, when that zone also was occupied by the Germans following the Allied landings in French North Africa. When the Allies landed in the south of France, Aug. 15, 1944, French forces under Gen. de Lattre de Tassigny advanced on Marseilles, which fell on Aug. 23, unorganized German resistance continuing, however, until the 28th. The city had not suffered seriously in the fighting.

**Marseilles-Rhône Canal.** An artificial waterway making navigation possible between Geneva and Lyons and the Mediterranean Sea, by means of a canalised Rhône and a canal to the harbour at Marseilles.



Marseilles. Plan of the old town and principal docks of the French Mediterranean port

Its two main features are a lock at Génissiat near the Swiss frontier and the use of a specially constructed tunnel near Marseilles. The tunnel is  $4\frac{1}{2}$  m. long, 72 ft. wide, with a depth of 10 ft. of water, contains two waterways, and was cut 1911-16; the canal between the river and Marseilles, which was opened to shipping in 1926, is 48 m. in length.

**Marshal** (old High Ger. *mara*, war horse; *scale*, servant). Title of various high military and civil officers. Originally meaning a groom or farrier, it was applied to the Frankish master of the horse. In England and Scotland the marshal had important duties and became a great officer of state. In France the marshal, associated with the constable, originally had high military command, and the office was revived temporarily by Napoleon. The title of marshal of France, which had been in abeyance since 1871, was revived in 1916, when it was bestowed on Joffre, and later on Foch, Pétain, Lyantey, and others. Marshal is a high military title in the U.S.S.R.

The term was also used for a kind of guardian of etiquette; in the British royal household there is an official in the lord chamberlain's department called the marshal of the ceremonies. The marshal of the king's bench was judge of the Marshalsea court, which tried disputes between royal servants. The city marshal, an officer of the corporation of London, rides before the lord mayor. At Oxford university the marshal is the proctor's chief attendant, and at Cambridge the vice-chancellor has two marshals. A judge of the high court when on circuit

is accompanied by a marshal, usually a young barrister, who acts as his secretary. His duties included the swearing in of the grand jury until these juries were abolished by the Administration of Justice Act, 1933. See Air Marshal; Earl Marshal; Field-marshal; Marschal; Marshal of the R.A.F.

**Marshall, ALFRED (1842-1924).** British economist. Born July 26, 1842, he was educated at Merchant



Alfred Marshall,  
British economist

Taylor's and S. John's College, Cambridge. In 1865 he was second wrangler, and he became a fellow of S. John's. In 1877 he was made principal of University College, Bristol, and in 1883 fellow and lecturer of Balliol College, Oxford. He was at Cambridge from 1885 to 1908 as professor of political economy, on which subject he had made himself a foremost authority, adapting the ideas of Ricardo and Mill to altered conditions. His classic work is *Principles of Economics*, 1890; he wrote *Industry and Trade*, 1919. Died July 13, 1924.

**Marshall, GEORGE CATLETT (b. 1880).** U.S. soldier and administrator. Born at Uniontown, Pennsylvania, on Dec. 31, 1880, he was educated at Virginia military institute, Lexington, being commissioned in the infantry Feb. 2, 1901. He served with the American expeditionary force in France in 1917, was A.D.C. to Gen. Pershing, 1919-24, and served in China, 1924-27. Back in the U.S.A., he held various posts, then in 1938 was made chief

of the war plans dept. of the general staff, becoming chief of staff with promotion to general, Sept. 1, 1939, the day Germany invaded Poland.

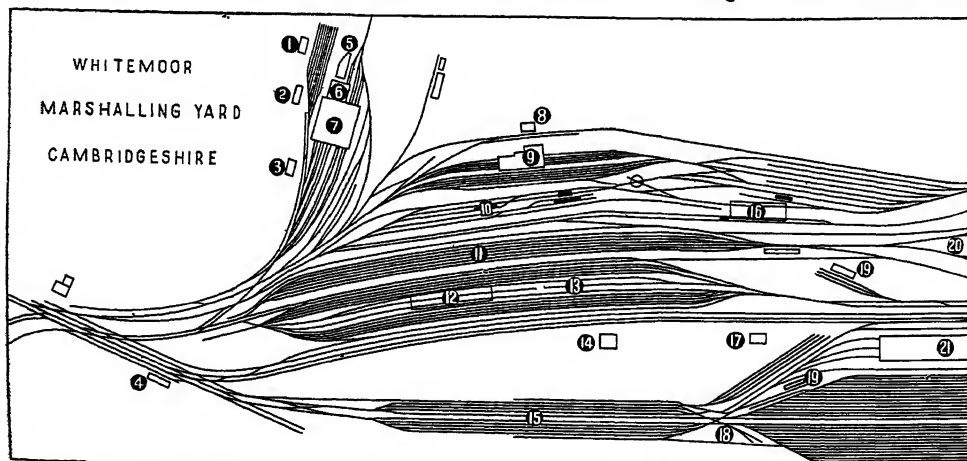
An advocate of conscription, he directed and coordinated with admirable tact and efficiency the expansion of the U.S. army after



George C. Marshall,  
U.S. soldier and  
administrator

enactment of the Selective Service bill. When the U.S.A. found herself in the Second Great War on Dec. 7, 1941, the army consisted of 1,500,000 men; by July, 1944, it had grown to 7,700,000, with more than 4,000,000 serving overseas in Europe, the Pacific, and Asia. It was Marshall who chose Eisenhower to command the Allied armies for the invasion of Europe on June 6, 1944. With Roosevelt, Marshall attended the conferences at Casablanca, Quebec, Cairo, and Teheran in 1943, at Quebec in 1944, and at Yalta in the Crimea, 1945. He was one of four made general of the army when that rank was created in Dec., 1944.

After the war he advocated a strong citizen army, and unification of the armed forces; but he relinquished his post as chief of staff on Nov. 20 before bringing any of these ideas to fruition, in order to become ambassador to China in an attempt to bring peace to that divided land. After 13 months, back in Washington he blamed extremists of both the Communists and Chiang Kai-shek's govt. for the failure of his



Marshalling yard. Whitemoor marshalling yard (formerly L.N.E.R.), Cambridgeshire. Incoming trains are split up by

mission. On Jan. 8, 1947, he succeeded James Byrnes as secretary of state, dropping his military title. He attended the abortive meetings of the council of foreign ministers in Moscow, March 10-April 24, and London, Nov. 25-Dec. 15. Speaking at Harvard university on June 5, he made suggestions whereby all Europe, acting in concert, might be helped by American aid to economic recovery. For the results of this speech and the implications of what became known in Europe as the "Marshall plan," see European Recovery Programme in N.V. Marshall resigned for health reasons Jan. 7, 1949.

**Marshall, JOHN** (1755-1835). American lawyer. Born in Virginia, Sept. 24, 1755, he fought through the War of Independence. Admitted to the bar in 1781 and 1782 elected member of the Virginia legislature, in 1798 he was elected to congress. In 1801 he became chief justice of the supreme court, and his judgements have become classics in American jurisprudence. He died July 6, 1835. A study by Lord Craigmyle appeared in 1933.

**Marshall-Hall, SIR EDWARD** (1858-1927). British lawyer. Born at Brighton, Sept. 16, 1858, and educated at Rugby and St. John's College, Cambridge, he became a barrister in 1883, and began to practise on the south-eastern circuit. He made a particular reputation in criminal cases, and from about 1900 he was the foremost advocate of this kind at the bar, appearing in outstanding trials, such as those of G. J. Smith, Seddon, Thompson, and Bywaters. In 1898 he took silk, and in 1917 he was knighted. In 1900 Marshall-Hall entered parliament as Union-

ist M.P. for Southport. He lost his seat in 1906, but in 1910 found one at East Toxteth, which he retained until 1916. Died Feb. 24, 1927. *Consul Life, E. Marjoribanks, 1929.*

**Marshalling.** In heraldry, the art of grouping and blending insignia so as to form an heraldic record. Thus a man who marries an heiress, or who acquires, or claims the rights to, territorial possession or hereditary offices, places the arms of his wife, the arms or other insignia of the feudal estate, territory, or office, in a small shield, called a shield of pretence, or a surtout, in the middle of his own arms. His successors usually quarter the arms of the heiress with their own, according to modern practice placing the paternal arms in the first and fourth quarters, and that of the heiress in the second and third. But in mediæval days those who acquired a fief or feudal estate superior to their own either abandoned their paternal arms for the more valuable insignia, or gave the latter precedence.

With sovereign territorial rights, or the acquisition of hereditary offices, the successors might retain the insignia in the shield of pretence, or quarter them. A husband and the holder of certain important offices, such as a bishop or a herald, impales his paternal arms with those of his wife or his office; in the former case placing his on the dexter, and in the latter on the



Sir E. Marshall-Hall,  
British lawyer

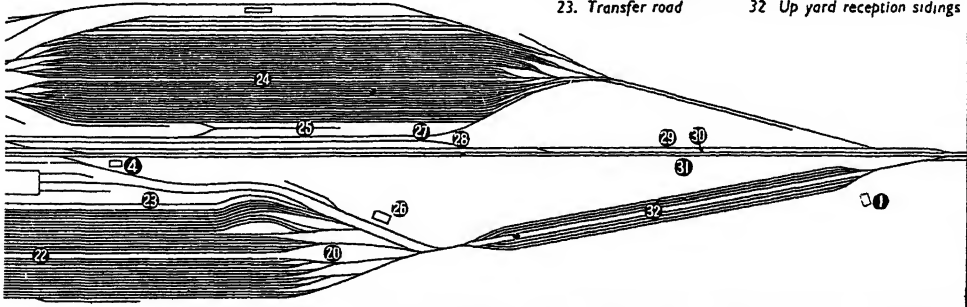
sinister, side of the shield. Or the two coats of arms may be retained in separate shields, which are placed together. See Heraldry.

**Marshalling.** Term used in the law of equity. A testator leaves two funds from which claims on his estate can be paid. Marshalling the assets means arranging them so that a person who has the right to have his legacy or debt discharged from both funds shall not do so to the detriment of another who can only come upon one fund. Thus A, who is entitled to receive £1,000 from either fund, cannot have it all out of fund A, which totals only £1,000 in all, as in that case he will be depriving of his rights B, whose £500 is payable only from this fund.

**Marshalling Yard.** Network of rails spreading out fanwise from a central track to enable trains of loaded freight wagons coming from different directions to be split up and formed into trains which will distribute them to their final destination. Stated simply, a marshalling yard accepts wagons from N., S., E., and W., and sorts them so that all wagons going S. form one train, and so on.

In a flat marshalling yard, the incoming wagons enter direct upon one of the sidings, where a shunting engine pushes them in "cuts" of one or more wagons according to their destination, into the lines upon which trains are being made up. Where large numbers of wagons have to be sorted and made up into trains, the hump system is employed. The wagons of each incoming train are uncoupled according to destination and then pushed slowly over an artificial hump, on the far side of

- |                        |                            |                              |                               |
|------------------------|----------------------------|------------------------------|-------------------------------|
| 1. Reservoir           | 8. Water cooling tank      | 15. Up departure roads       | 24. Down empty yard           |
| 2. Stores              | 9. New loco. running shed  | 16. Loco. oil fuelling plant | 25. Exchange siding           |
| 3. Offices             | 10. Coaling plant          | 17. Tank house               | 26. Pump house                |
| 4. Junction signal box | 11. Down reception sidings | 18. Brake hump               | 27. Transfer road             |
| 5. Sub-station         | 12. Down tranship shed     | 19. Cattle pens              | 28. Departure road            |
| 6. Blacksmith's shop   | 13. Down goods yard        | 20. Control tower            | 29. Down reception road       |
| 7. Loco-repair shed    | 14. Yardmaster's office    | 21. Up tranship shed         | 30. Down main                 |
|                        |                            | 22. Up marshalling yard      | 31. Up main                   |
|                        |                            | 23. Transfer road            | 32. Up yard reception sidings |



running over the hump (18) on to the radiating tracks (22). Outgoing wagons are shunted on to other tracks (24)



which is a steep slope with sorting sidings radiating. As each wagon draws away from the rest of the train it drops down by gravity on to the sidings. Sufficient time is allowed for switches, giving access to the fan of sidings, to be moved between one wagon and the next, so that each may run into the appropriate track.

Train sorting in the largest marshalling yards is now completely mechanised. Before a train is pushed up the hump, the wagons are uncoupled and a list of their destinations compiled by the shunter and posted by pneumatic tube to a control tower. From these lists the entire movements necessary to make up a train are set on a control machine which automatically arranges the points leading to the final sorting track. As each wagon runs down the hump it trips a lever which automatically resets the points behind it. Points immediately beyond the track leading from the hump are operated electrically from the control tower. To prevent wagons running off the hump too rapidly, rail-brakes, controlled from the tower, are fitted in the tracks.

One of the largest marshalling yards in Great Britain working on the mechanised hump system is at Whitemoor, near March, Cambs. It has 40 sorting sidings radiating from the hump and can deal with over 4,000 wagons daily. Train movements are controlled by radio telephony. The most famous marshalling yard in Europe is at Hamm, Germany; this was repeatedly bombed by Allied aircraft during the Second Great War.

**Marshall Islands.** Two chains of islands in the N. Pacific ocean. They lie E. of the Carolines, and are composed of the Ratak group of 13 islands and the Ralik group of 11. They are shallow-soiled, but yield crops of coconuts and bread fruit. Phosphate and copra are exported. The chief island and administrative centre is Jaluit. They were occupied by German traders in 1888 and taken over by the German colonial authorities in 1906. Seized by the Japanese early in the First Great War, they were afterwards administered as a Japanese mandate. During the Second Great War the islands were frequently attacked by U.S. aircraft and by the U.S. Pacific Fleet.

On Jan. 29, 1944, after raids on 20 consecutive days, U.S. forces began a concentrated attack—the largest undertaken to that date—by carrier and shore-based planes and by bombardment from cruisers on the chief islands of the group. The small undefended atoll of Majuro was taken on Jan. 31, and next day U.S. marines landed on

Roi, Namur, and Kwajalein. By Feb. 22 control of the Marshalls had passed to the U.S.A. The Japanese



garrisons of those atolls not invaded, left helpless by the Allied advance in the Pacific, surrendered formally Sept. 2, 1945.

The U.N. trusteeship of the group was given to the U.S.A. in 1947.

In the same year Eniwetok (*q.v.*) atoll was developed as a testing ground for atomic weapons.

**Marshall Pass.** Pass in Colorado, U.S.A., in Saguache co. It is named after William Louis Marshall, who served in the Civil War. It has an elevation of 10,841 ft., and is used as a rly. route across the Rocky mountains.

**Marshall Plan.** Name popularly given to proposals put forward by G. C. Marshall (*q.v.*), as U.S. secretary of state, in a speech at Harvard university on June 5, 1947, for economic cooperation

among European countries in their own post-war recovery, with assistance from the U.S.A. See under European Recovery Programme in *Novissima Verba*, at the end of this Encyclopedia.

**Marshal of the Royal Air Force.** Highest rank in the R.A.F. corresponding to admiral of the fleet and field marshal. Until the outbreak of the Second Great War, it had been granted to only three officers, apart from the reigning sovereign, the first being Sir Hugh (later Viscount) Trenchard, in 1927. The insignia of rank are one broad and four narrow rings on the tunic sleeves or coat epaulettes.

**Marshalsea.** Former London prison. Originally the prison of the court of the knights marshal for settlement of disputes among royal servants, and punishment of offenders within the jurisdiction of the king's court, it stood opposite Maypole Alley, in Borough High Street, Southwark. Mentioned in the 14th century, it suffered at the hands of the rebels under Wat Tyler. In Elizabethan times the second of the London prisons, it became in the 18th century the county gaol for felons, an admiralty gaol for pirates, and a debtors' prison. Notable prisoners included Bishop Bonner, who died here, George Wither, and John Udall.

It was pulled down about 1780, and rebuilt in 1811, on ground adjoining S. George's Churchyard, and this structure, which John Wesley in 1753 described as a picture of hell upon earth, was the one made famous by Dickens in *Little Dorrit*, and the one in which his father was imprisoned. It remained in use until the court was abolished in 1849, and was demolished in 1887, with the exception of a turret. See *illus. below*.

**Marsh Cypress** (*Taxodium distichum*). Tall coniferous tree of the family Pinaceae. A native of N. America, it is also known as the bald or black cypress. The leaves are very slender and yellow-like, and are shed in autumn; the cones globular, of thick, shield-shaped scales. It grows in swamps, and, like the white mangrove (*q.v.*), its roots send up "kneeroots" for the purpose of supplying the roots with oxygen. In the marsh cypress these growths, which are hollow, may be more than 3 ft. in height. Correlated with these "kneeroots," the base



Marshall Islands.  
Types of natives



Marshalsea. Part of the north side of the old London prison. Left, buildings of the original prison; right, the court house, which was a later addition  
From a print of 1773





Marsh Cypress, showing the knee-roots sent up to obtain oxygen

of the trunk has a hollow space, into which the oxygen is conducted.

**Marsh Gas.** Alternative name for fire-damp, methyl hydride, or methane (*q.v.*).

**Marsh Mallow** (*Althaea officinalis*). Perennial herb of the family Malvaceae. Indigenous to Europe, Asia, and N. Africa, it has roundish or oval thick leaves with toothed edges, and large rosy flowers. The whole plant is 'downy'. It grows in marshes near the sea. The hollyhock (*A. rosea*) is a Chinese species of the genus.

**Marsh Marigold** (*Caltha palustris*).

Perennial herb of the family Ranunculaceae. A native of Europe, Asia, and N. America, it is also known as kingcup. It has a stout, creeping rootstock, and large, kidney-shaped leaves. The flowers are exaggerated buttercups of golden yellow sepals, the petals being absent. The unopened buds are pickled and eaten as a substitute for capers. See Botany.



Marsh Mallow. A plant that thrives near the sea



Marsh Marigold or Kingcup. Flowers and leaves

These hardy mountaineers came over the Alpine passes, and absorbed the primitive aboriginal

hunters of Mediterranean stock. They shared in the Social or Marsic War (90-88 B.C.), which gained for them and other provincial tribes the Roman franchise. See Paeligni.

**Marsileaceae.** A family of Pteridophytes (fern-plants) containing the genera *Marsilea* and *Pilularia*. They are marsh or aquatic plants, and have creeping rootstocks, sending up fronds at intervals. These are rolled from the top, as in the true ferns. The spore-capsules spring from the base of the frond. The development of the spore into a spore-bearing plant is somewhat similar to that in other Pteridophytes. See Pillwort.

**Mars-la-Tour.** A village of France, in the dept. of Meurthe-et-Moselle, 9 m. W. of Metz. It was the scene on Aug. 16, 1870, of a severe cavalry fight in the Franco-Prussian War. The 2nd Dragoons of the Prussian Guard were sent in to rescue the 38th (Westphalian) infantry brigade from General de Ladmirault's men. Ladmirault sent six regiments of horse to attack them, but these were again met by von Barby's cavalry brigade, and a great hand-to-hand struggle terminated in favour of the Prussians.

**Marsovan, MERZIVAN, OR MERSIFUN.** Town of Asiatic Turkey, in the vilayet of Amasya. It is 24 m. W.N.W. of the town of Amasya, on the edge of Marsovan Plain. Silver is mined in the locality.

**Marston, JOHN** (c. 1575-1634). English dramatist. His father was English and his mother Italian. Educated at Coventry and at Brasenose College, Oxford, he wrote a number of satires, several tragedies and comedies, and became involved in the famous stage quarrel with Jonson and Dekker. Marston's first work, an amatory poem, *The Metamorphosis of Pigmalion's Image*, and his series of satires, *The Scourge of Villanie*, both published 1598, were burnt by order of Archbishop Whitgift. His earlier dramatic work, particularly the tragedies *Antonio and Mellida*, *Antonio's Revenge*, and *Sophonisba*, are vigorous but turgid and unreal. Marston collaborated with Jonson and Chapman in *Eastward Hoe*! His plays were edited by A. H. Bullen in 1887.

**Marston, JOHN WESTLAND** (1819-90). British dramatist and critic. Born at Boston, Lincolnshire, Jan. 30,



Westland Marston, British dramatist After E. Morn

1819, he early gave up the law for literature, and wrote about a dozen plays, chiefly poetical dramas, of which the most successful were *The Patrician's*

*Daughter*, 1841, *Strathmore*, Philip of France, and, in prose, *A Hard Struggle*. He died Jan. 5, 1890.

**Marston, PHILIP BOUKE** (1850-87). British poet. He was born in London, a son of John Westland Marston (*v.s.*), Aug. 13, 1850, and became almost blind at the age of three; lost by death within a few years his fiancée, his two sisters, and his friends Oliver



Philip B. Marston, British poet

Madox Brown and James Thomson. His poems, often exquisite if somewhat monotonous, were pub. as *Song Tide*. All in All, *Wind Voices*. He died Feb. 13, 1887.

**Marston Moor, BATTLE OF.** Fought July 2, 1644, during the English Civil War (*q.v.*). The Scottish army, as promised in the Solemn League and Covenant, had entered England and united with the parliamentary force in the north. In the face of this menace Newcastle, the king's general, fell back on York, and that city was besieged. A royalist force under Rupert was sent to its relief. Rupert's army crossed into Yorkshire on June 28.

The Scots and their allies awaited the enemy on Marston Moor, between York and Knaresborough. Rupert, however, avoided them, and, entering York, urged Newcastle to fight. The parliamentarians were already in retreat, but when pursued they turned and stood on this moor, between Long-marston and Tockwith. The parliamentary army had infantry, Scots and English, in the centre, and cavalry on the wings. Cromwell with his Ironsides and David Leslie with some Scottish horse were on the left. The royalists were in similar formation. The royalists, not expecting the action until the morrow, were hardly

ready for the opening of the battle, when the parliamentarians, at 7 p.m. on July 2, attacked in full force.

On the left, Cromwell and Leslie drove Rupert's horsemen from the field, but on the right Fairfax was routed, and in the centre the royalists also had the advantage. A breach was made in the parliamentary line and many were soon in flight. But Cromwell, keeping his men well in hand, swung them round and fell upon the victorious royalist horsemen of the other wing, who were quickly routed. The infantry of the eastern counties, who had stood firm, did their part, and soon a great attack was delivered on the unbroken line of the royalist foot. These fought valiantly, but by the end of the day all were either dead, prisoners, or fugitives. The victors at once entered York. It is computed that the parliamentarians numbered about 25,000 and the royalists about 18,000. Of the latter about 3,000 were slain.

**Marsupial** (Lat. *marsupium*, a pouch). Sub-class of mammals. They are provided with pouches in which the later stages of the development of the young take place. Except for the monotremes (*q.v.*) they form the most primitive living group of mammals, and are distinguished by the details of their embryology. The young are born after a very short gestation, in a very small and rudimentary condition.

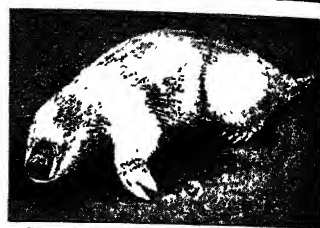
The young of the kangaroo, for example, is only about an inch long at birth. The mother takes up the newly-born young, apparently with her lips, and places them in the abdominal pouch, which contains the teats. Here they are attached to the teats by their lips, which at this stage resemble a

cylindrical sucker, and the milk is injected into their throats by muscular contractions on the part of the mother. To avoid the danger of choking, the upper portion of the windpipe in the young is at this stage prolonged into a tube which fits into the back of the nasal cavity, so that air is drawn directly from the nostrils into the lungs, while the milk passes outside and around this tube into the gullet, and so to the stomach. In a very few species the pouch is absent, the young being concealed by the long hair as they cling to the teats.

Marsupials are found both in Australasia and S. America. These regions are characterised by their isolation and the comparative absence of animals of the placental type. The marsupials would probably have become extinct if it were not for this fact, for they cannot compete with the placental mammals. Formerly their range was much wider, occurring in most parts of Europe; and fossil remains have been found in Great Britain. The earliest known fossils occur in the Cretaceous rocks of Canada, and are generally regarded as nearly, if not quite, the most primitive form of mammalian life.

The existing marsupials are divided into two sub-orders, chiefly differentiated by their dentition. The first are mainly carnivorous and the second mainly herbivorous, although insectivorous examples occur in both. The former includes the Tasmanian wolf, the dasyure or native cat of Australia, the bandicoots, the banded anteater, and American opossum. The herbivorous marsupials include the kangaroo and wallaby, the phalanger, the kangaroo rat, the wombat, and the koala or native bear. In size they vary from the grey kangaroo, which is often 5 ft. high, to species no larger than a mouse. See under names of marsupials quoted.

**Marsupial Mole** (*Notoryctes typhlops*). Small marsupial mammal, found in the deserts of S. Australia. It is molelike in general appearance and habits, is about 5 ins. long, and its soft fur is golden-red in colour. The forepaws are powerful digging implements, paddle-shaped, and armed with strong and stout claws. The abdomen is provided with a pouch in which the young are suckled. There are no external eyes or ears, and the animal seems to make its way about by its sense of touch. Also called the pouched mole, it is



Marsupial Mole. Specimen of the small Australian desert mammal

found a few inches below the surface of the sand.

**Marsyas**. In Greek mythology, a Phrygian peasant, or, according to other accounts, a satyr. Proud of his skill on the flute, he challenged Apollo to a contest. The contest took place on the understanding that the victor should do what he willed to the other. The Muses, who were the umpires, awarded the decision to Apollo, who punished Marsyas for his presumption by binding him to a tree and flaying him alive.

**Martaban**, GULF OF. Broad inlet of the Bay of Bengal in Burma. The Sittang flows into the head of the gulf; W. is the Irawadi delta, E. the mouth of the Salween. Rangoon, Moulmein, Pegu, and Amherst all lie on or close to the shore. The city of Martaban, which was for several centuries the capital of the kingdom of Pegu, is now only a village.

**Martel**, SIR GIFFARD LE QUESNE (b. 1889). British soldier. Martel was born Oct. 10, 1889, and educated at Wellington College. He served in France during the First Great War, and was an instructor at the staff college, Quetta, 1930-34. Martel became an authority on mechanisation and the employment of tanks, on which he contributes the article in this Encyclopedia—also those on British Expeditionary Force; North Africa Campaigns; Strategy. Deputy director of mechanisation at the war office, 1938-39, promoted major-general in 1939, he commanded the 50th division in France in 1940 and was head of the British military mission in Moscow in 1943. He retired in 1944 with the rank of lieutenant-general, and was created a K.C.B. in the same year. He published military books, *e.g.* *Our Armoured Forces*, 1945.

**Martel de Janville**, SYBILLE GABRIELLE MARIE ANTOINETTE DE RIQUET DE MIRABEAU, COMTESSE DE (1849-1932). French novelist, well known by her literary pseudonym of Gyp. A great-grand-niece of Mirabeau, she was born in Morbihan, Brittany, August 15,



Marsupial. Bennett's Wallaby, a typical marsupial carrying her young in the pouch characteristic of the order  
Gambier Bolton, F.Z.S.

1849, and was educated at the convent of the Sacré Coeur. She became the author of a long series of novels and sketches, famous for their gaiety, vivacity, and wit. They range from *La Vertu de la Baronne*, 1882, down to the First Great War satire of *Les Profitards*. She was also a painter of some talent, and made a reputation, under the name of Bob, as a caricaturist. In politics she was connected successively with the Boulangist, anti-Semite, and nationalist movements. She died June 29, 1932.

**Martello Tower.** A type of building erected for coast defence. Named after a tower on Cape Mortella, Corsica, which a British squadron, when succouring the Corsican insurgents in 1794, found almost impregnable against their attacks, this type was used in the defences built round the S. and E. coasts of England in preparation for Napoleon's threatened landing. About 40 ft. high and frequently surrounded by a moat, martello towers are of solid masonry and contain rooms for a garrison of about 30. The only entrance is some 20 ft. above the ground, reached by a ladder or drawbridge. A platform on the top served for the guns, which were protected by a parapet. Although erected at enormous cost, the towers were never used, and being defenceless against 20th cent. weapons they are now mostly deserted. A few have been converted into private residences and coastguard stations.

**Marten** (*Martes*). Genus of carnivorous mammals belonging to the weasel family. They differ from the weasels, stoats, and polecats in their larger size, longer limbs, tree-climbing habits, and in details of dentition. They have fine and valuable fur of reddish-brown colour, and a long and bushy tail. There are several species, of which only the pine marten occurs in Great Britain. This species has chocolate-brown fur, with orange chest and throat, and the edges of the ears are white. A fine specimen will mea-

sure 20 ins. in length. It was formerly fairly common in the British Islands, but persecution has now made it rare, and it is only found in secluded localities. It occurs in pine woods in N. Wales, the Lake District, the Scottish Highlands, and in the N. of Ireland, and ravages the covert and the poultry yard. On the W. coast of Scotland it feeds to some extent on shellfish, and it will often eat fruit. Savage in disposition, it will fight furiously with dogs if surprised at a distance from trees. The beech marten, which has white underparts, is common in Central and S. Europe. See Sable.

**Marten, MARIA.** Victim of a notorious murder. William Corder, of Polstead, Suffolk, formed an attachment with Maria Marten

of the same village, but, becoming tired of the girl, he lured her to a lonely building, called the Red Barn, where he murdered her, burying the body. The girl's stepmother, who was aware of the meeting at the barn, eventually became suspicious and per-

suaded her husband to dig up the floor of the building, where the corpse was discovered. Corder was arrested and found guilty at the assizes which opened at Bury St. Edmunds on Aug. 4, 1828. He was hanged a week later. Shortly afterwards a play entitled *The Red Barn*, or *The Mysterious Murder*, was produced at the Royal Pavilion Theatre, Mile End, London, and has since been revived on numerous occasions.

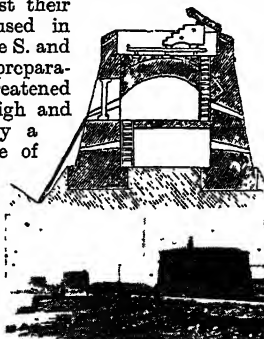
**Martens, ADOLF** (1850-1914). German engineer. Born at Beckendorf, March 5, 1850, he worked in a factory at Güstrow, 1867-68, and then studied at the industrial academy at Berlin, being afterwards employed in railway bridge construction. In 1879 he was appointed to a chair in the Berlin technical university, and in 1884 became director of the institute for mechanical experiments. He acquired a considerable reputation by his researches

on the resistance of metals for technical purposes, and contributed largely to the science of metallurgy, giving his name to martensite (*v.i.*). He died July 24, 1914.

**Martensite.** The hardest constituent commonly found in steels. It has a Brinell Hardness of up to 800. Martensite is the first decomposition product obtained on cooling a steel. If a steel is heated above the upper critical point, which is about 900° C. for pure iron, but varies with the carbon content of the steel, all the carbon in the steel goes into homogeneous solid solution. This is quite soft. But in an ordinary carbon steel it is impossible to retain its face-centred cubic lattice structure at room temperatures however quickly the steel is cooled. By very rapid quenching it is possible to prevent the steel from reaching its normal equilibrium structure of pearlite with varying amounts of cementite or ferrite and to produce the intermediate structure of martensite. This is either body-centred tetragonal or body-centred cubic and, furthermore, being alpha iron it will not dissolve carbon. The result is that bulky molecules of iron carbide form inside the lattice structure and so peg it that the atoms cannot easily slide over each other. For this reason the martensite is extremely hard and brittle, having the appearance of a number of fine, white needles when seen under the microscope. See Austenite; Iron; Metallography; Pearlite; Steel.

**Martha.** New Testament character. In Luke 10 and John 11-12 she is represented as the sister of Lazarus and Mary, at whose house Jesus stayed when in Bethany. Martha serves as an example of the virtue of hospitality, but is gently reproved for her somewhat over-anxious, bustling spirit, which led her to pay more attention to the bodily comfort of her Guest than to His teaching.

**Martha's Vineyard.** Island off the S. coast of Massachusetts, U.S.A., forming, with the Elizabeth Is., Dukes co. Situated 5 m. from Cape Cod, its greatest length is 21 m., greatest width 10 m.; its area is 108.7 sq. m. It has a level surface, relieved in the W. by a hill ridge reaching 308 ft. Once a whaling and trading centre, it has fisheries and small farms today, but is noted chiefly as a summer resort. Edgartown, the co. seat, has a pop. 1,370. The island was discovered 1602; Great Harbour (near Edgartown) was settled 1642. Pop. (Dukes co.) 5,669.



Martello Towers on the coast at Hythe, Kent. Top, sectional diagram of internal arrangement



Marten. Specimen of the pine marten, *M. martes*

**Martial** (c. 43-c. 104). Roman epigrammatist. Marcus Valerius Martialis was born at Bilbilis in Spain, and came to Rome in 66. The early part of his life in Rome was a rather sordid struggle, but the latter years, when he became possessed of a small country house in the Sabine hills, were passed in comparative comfort. His life was that of a parasite, as is evidenced by his fulsome flattery of his patrons, especially of the sinister emperor Domitian. The great majority of his writings are epigrams, which afford valuable information on every aspect of the life of the period. Many of the epigrams are grossly indecent, but are the work of a brilliant literary genius, with an extraordinarily flexible style, polished wit, a keen sense of the ridiculous, a tolerant, kindly temperament, and a genuine love of nature and the homely pleasures of a country life. Weary of Rome, he retired in 98 to his birthplace, where he died.



Martial, Roman epigrammatist  
From a bust

**Martial Law.** Term somewhat loosely employed to indicate the suspension of the administration of normal civil law and its replacement by military authority, when such a change is rendered desirable by special circumstances, of which war and rebellion are the most usual examples.

The term martial law does not signify a law in the usually accepted sense, but essentially the enforcement of the authority and power of the military commander of the district affected, who becomes responsible for taking whatever measures he considers advisable for ensuring the safety of the state and its loyal subjects. Before a district is placed under martial law, a proclamation is published by the executive, notifying the public generally that ordinary law is insufficient to cope with the situation, after which the military authority specifies what, if any, special regulations will be applied, and issues orders regarding such restriction of personal and public liberty as is thought necessary to the public safety.

The advantage of martial law in times of emergency is that exceptional means of arrest and punishment may be taken against persons who resist the government or aid

the enemy, and that it is readily possible to define as punishable offences any conduct which a rapidly changing military situation shows to be inimical to the success of the government forces. Under martial law, the ordinary civil courts may be maintained coexistent with, or entirely replaced by, military tribunals. Minor offences are dealt with by duly authorised officers, and the more serious by military courts which have unlimited powers of punishment. In British practice, the military tribunals are usually constituted as courts-martial (*q.v.*), and the procedure followed is that of military law, the sentences being confirmed in accordance with the provisions of the Army and Air Force Act (*q.v.*).

Under the Petition of Right, which is reproduced in the preamble to the Army Act, martial law is illegal in Great Britain in times of peace, but it is legalised by various Acts which provide for it to be employed, whether the ordinary courts are open or not, in times of emergency. Naturally, its enforcement involves suspension of the privilege of Habeas Corpus. After the suspension of martial law an Act of indemnity is always passed to protect any person responsible for its administration, who has exceeded his powers in good faith. Martial law cannot be made retrospective, and can only be enforced in the districts within which it has been proclaimed. But under special circumstances a person arrested outside such a district may be brought within it and tried by the military tribunal.

Martial law has been enforced but rarely in Great Britain. During the Second Great War, in expectation of invasion, provision was made for setting up war-zone courts to try criminal cases in places in which, because of enemy action, it might be impossible for ordinary law to function. These courts would not have been military courts, as it was provided that the president must be a judge of the supreme court. Fortunately, it never became necessary to make use of these provisions. Martial law was enforced in the war area during the South African War, in parts of Ireland in 1920 and 1921, and frequently in India and Palestine. Martial law must not be confused with military law which applies to sailors, soldiers, and airmen for the purpose of enforcing discipline. Military law is to be found in the Naval Discipline Act and the Army and Air Force Acts. See Court Martial.

**Martigny.** Town formed from three villages in canton Valais, Switzerland. It stands on the river Drance, 41 m. by rail S.E. of Lausanne. The Roman Octodurus, it is on the historic route over the Great St. Bernard to Aosta. On the Simplon rly. to Italy, the starting-place of the electric rlys. to Chamonix, and of the route to the Val de Bagnes, it is a busy place in the tourist season.

**Martigues.** Harbour of S. France, in the dept. of Bouches du Rhône. It is built on three islands, connected by bridges, on the S. side of the Étang de Berre near its outlet to the Gulf of the Lion, and is connected with Marseilles by rly. Pop. 11,295.

**Martin.** Name given to various members of the swallow tribe. Two species occur in Great Britain, the house martin and the sand martin. The former (*Delichon urbica*) is a familiar summer visitant, arriving in April and May and migrating to Africa about the middle of Oct. The plumage of the upper parts is black with violet reflections, and of the lower parts pure white. It is slightly smaller than the swallow, with shorter wings and a less forked tail. Its nest is fixed to a wall, generally under the eaves of a house, and is formed of mud strengthened with hair and fibres, and lined with feathers. Two broods are reared.

The sand martin (*Riparia riparia*) arrives in spring before the house martin, and leaves early in



Sand Martin at the entrance to its nest  
W S Berridge, F.Z.S.

Sept., and is fairly common in many parts of Great Britain, except in the extreme N. It is mouse coloured above with white below, and has a rather short tail. It nests in burrows in sand pits and banks of clay, usually three or four ft. deep and sloping upward to the breeding-chamber, where a nest of hay and feathers is constructed. The same burrow is used each year.

**Martin** (c. 316-c. 400). Saint and bishop. A native of Pannonia, he was educated at Pavia, and became an officer in the army under Constantine and Julian. Leaving the army, he placed himself under S. Hilary of Poitiers, and after labouring as a missionary in Pannonia he founded a monastery near Poitiers, about 360, and there he remained till he was appointed

bishop of Tours in 371. His only known literary work is his Confession of Faith in the Holy Trinity.

**Martin.** Name of five popes, of whom three are noticed separately. Martin II and III are more accurately named Marinus I and II respectively, Marinus having been written Martinus in error. The former was pope from 882 to 884, the latter 942-46. The former, who had attended the council of Constantinople in 869 as the representative of western Christendom, was intimate with Alfred the Great.

**Martin I** (d. 655). Pope from 649 to 654. He was born at Todi on the Tiber, and on his election to the papacy he at once pronounced against the monothelite heresy, then maintained by the emperor Constans II and by Paul, patriarch of Constantinople. In 653 the emperor, instigated by Paul, sent an exarch to Rome, demanding the surrender of the pope. Martin yielded to avoid bloodshed, and after being imprisoned near Constantinople was exiled to Cherson, where he died Sept. 16, 655. He is honoured as a saint in the Eastern and Latin churches, his festival being Nov. 12 in the latter communion. *Consull Lives of the Popes in the Middle Ages*, H. K. Mann, 1902.

**Martin IV** (c. 1210-85). Pope 1281-85. A Frenchman, born in Touraine and named Simon de

Brie, he was chancellor of France under Louis IX, 1260, cardinal, 1261, and papal legate in France for over 20 years. After his election to the papacy he was the instrument of Charles of Anjou, upon whom he depended for protection. After the massacre known as the Sicilian Vespers, Martin still tried to keep Sicily for France, and even ordered a crusade against the king of Aragon, whom the Sicilians had chosen for their ruler. He died at Perugia, March 28, 1285.

**Martin V** (1368-1431). Pope 1417-31. Otto di Colonna was one of the cardinals who deserted Gregory XII and took part in the council of Pisa, 1409, and the

election of the anti-popes Alexander V and John XXIII. On his election as undisputed pope at the council of Constance by the representatives of the five nations—German, French, Italian, Spanish, and English—which put an end to the Great Schism, he took the name of Martin. The

chief activity of his pontificate was the re-establishment of the temporal affairs of the papacy, entirely disorganized as a result of the Schism, together with the restoration of the city of Rome itself and the Papal States. In all these schemes his chief assistants were members of his own family of the house of Colonna, on whom he lavished in return important ecclesiastical and secular offices. In accordance with the decree of Constance summoning a council within five years, he convened the council which opened at Pavia in 1423, but dissolved it on Feb. 26, 1424. He died Feb. 20, 1431.

**Martin, (BASIL) KINGSLEY** (b. 1897). British journalist. Born July 28, 1897, he was educated at Mill Hill and Magdalene College, Cambridge, and was a lecturer at the London School of Economics, 1923-27. Next with the Manchester Guardian, in 1931 he became editor of the New Statesman and Nation. He wrote *The Triumph of Palmerston*, 1924; *French Liberal Thought in the 18th Cent.*, 1929; *The Magic of Monarchy*, 1937; *Propaganda's Harvest*, 1942.

**Martin, SIR GEORGE** (1764-1847). British sailor. He went to

sea in 1776 and saw service in the W. Indies, 1779-80. Two years later he was given his first command. At the battle of Cape St. Vincent, 1797, he commanded the *Irresistible*,

in which Nelson hoisted his flag when the Captain was disabled. Martin was appointed to the Northumberland, 1798, blockaded Malta and reduced Valletta in 1800, and after a brief period in Egypt returned to the Channel fleet, where, in command of the *Barfleur*, he fought in the battle of

Cape Finisterre, 1805. In 1807 he blockaded Cadiz. Vice-admiral in 1810, he was knighted in 1814, became admiral in 1821, and commander-in-chief at Portsmouth in 1824. He died July 28, 1847.

**Martin, SIR GEORGE CLEMENT** (1844-1916). British organist and composer. Born at Lambourn, Berks, Sept. 11, 1844, he studied under Stainer and took his musical degree at Oxford in 1868. He was appointed master of song at the choir school of S. Paul's cathedral in 1874, and on the retirement of Stainer in 1888 became organist to the cathedral. Elected teacher of the organ at the R.C.M. in 1883, he was appointed to a similar post at the R.A.M., 1895, and knighted in 1897, on the occasion of the diamond jubilee of Victoria, for which he composed a special Te Deum. Martin wrote *The Art of Training Choir Boys*. Died Feb. 23, 1916.

**Martin, GLENN L.** (b. 1886). American aircraft manufacturer, born at Macksburg, Iowa, Jan. 17, 1886. He was educated at Kansas Wesleyan university. He began to build gliders in 1907 and aeroplanes next year, establishing the first aircraft factory in the U.S.A. in 1909. He was founder, president, and general manager of the firm of Glenn L. Martin Co. (now centred in the Baltimore area), which produced such well-known aircraft as the Baltimore (*q.v.*), *Marauder* (*q.v.*), Maryland, and the *Mariner* and *Mars* flying-boats.

**Martin, HENRI** (1810-83). French historian. Born at St. Quentin, Feb. 20, 1810, and baptized Bon

Louis Henri, Martin was educated for the law, but devoted his life to historical research, although he was for a few years a member of the chamber of



Henri Martin,  
French historian

deputies. He died in Paris, Dec. 14, 1883. Martin's fame rests entirely on his *Histoire de France*, which, despite Guizot's condemnation as "bad history, bad philosophy, and bad literature," for long ranked as the standard history of France. A first and prizewinning edition in 15 vols., 1833-36, was followed by others, one being largely rewritten, and another abridged. A continuation in 6 vols. made it the most complete work of its kind.

**Martin, HENRI JEAN GUILAUME** (b. 1860). French painter. Born at Toulouse, he was a pupil of



Martin V,  
Pope, 1417-31  
From a coin



Martin I, Pope, 649-54  
From a medal



Martin IV,  
Pope, 1281-85  
From a coin



Sir George Martin,  
British sailor  
After Lawrence



J. P. Laurens. In 1883 he received a medal for his picture Paolo and Francesca, in the Carcassonne museum. Inspiration, 1895, painted as part of a decorative scheme for the hôtel de ville, Toulouse, was bought for the Luxembourg, and Apparition of Clémence Isaure to the Troubadours, 1898, is in the hôtel de ville at Toulouse. He painted L'Étude for the Sorbonne, 1908; Le Travail, for the palais de justice, 1914; and was elected to the Académie des Beaux-Arts in 1917.

**Martin, JOHN** (1789-1854). British painter. Born near Hexham, July 19, 1789, he was apprenticed to a coach painter in Newcastle, and proceeded to London in 1806, where he earned his living for a time by painting china. In 1812 he painted his first picture, Sadak in Search of the Waters of Oblivion. A regular exhibitor at the R.A., 1812-52, he also showed work at the British Institution, where in 1817 his picture Joshua Commanding the Sun to Stand Still, was awarded a premium of £100, and in 1821 his Belshazzar's Feast gained a prize of 200 guineas. He took part in founding the Society of British Artists. He exhibited The Fall of Nineveh, at Brussels, 1833. He died at Douglas, Isle of Man, Feb. 17, 1854. Martin, whose work is very melodramatic, and shows a wild imagination, painted mainly in oils, but also in water-colour, chiefly landscapes and river scenes. He also illustrated the Bible and Paradise Lost. Among his chief works are Adam's First Sight of Eve, 1813; Clytie, 1814; The Fall of Babylon, 1819; and The Destruction of Herculaneum, 1822, in the National Gallery. *Consult* Life, T. Balston, 1948.

**Martin, SIR THEODORE** (1816-1909). British writer. Born at Edinburgh, Sept. 16, 1816, and educated at Edinburgh university, he became a solicitor, first in Edinburgh, and from 1846 in London. Literature was the occupation of his leisure hours throughout the whole of his long life.

Martin's fame, however, rests chiefly on his translations of Horace, 1882, his rendering of the odes being on the whole the most acceptable in the English language. He also translated

Catullus, Heine, and Dante. In 1866, at the request of Queen Victoria, he undertook the biography of the Prince Consort, which was published in five volumes from 1875 to 1880, in which year he was made K.C.B. Martin married the well-known actress Helen Faucit in 1851, and died at his home near Llangollen, Aug. 18, 1909.

**Martin Chuzzlewit.** Charles Dickens's fifth novel, originally published in monthly parts, Jan., 1843-July, 1844, with illustrations by Phiz, and in book form in 1844. Its avowed theme was selfishness and the retribution it invites, selfishness being made the besetting sin of the Chuzzlewit family, of whom the Martin of the title is the youngest representative. But the central figure is the arch-hypocrite Seth Pecksniff (q.v.). He and Sairey Gamp (q.v.), another character, are two of Dickens's greatest comic creations. Other popular figures are the gawky, simple-hearted Tom Pinch (q.v.) and the persistently "jolly" Mark Tapley (q.v.). Distressed by the initial falling-off in sales, Dickens altered his plans during the serial publication and introduced a highly satirical description of America, which he had visited in 1842-43. Other scenes of the story are laid in London and in a village which has been identified with Amesbury, Wilts.

**Martindale, CYRIL CHARLES** (b. 1879). British Roman Catholic divine. He was born May 25, 1879, and educated at Harrow and Stonyhurst, and at Campion Hall, Oxford. He taught at Stonyhurst, Manresa House, Southampton, and Oxford, and



C. C. Martindale,  
British Roman  
Catholic divine

rose to be a leading figure among British Jesuits. He travelled widely, wrote many books on religious subjects, dealing especially with missionary work, and edited the series of Catholic Thought and Thinkers. He was president of the federation of Catholic societies in universities of Great Britain. Father Martindale contributes the article Jesuits to this Encyclopedia.

**Martineau, HARRIET** (1802-76). British author. A sister of James Martineau, she was born at Norwich, June 12, 1802. In 1832 she achieved literary success

when her Illustrations of Political Economy, a series of tales written to demonstrate economic truth, brought the acquaintance of many leading men. In 1834 she paid a visit to America, then greatly agitated by the question of the abolition of slavery, and as an abolitionist herself had some unpleasant experiences. On her return she published Society in America, 1837.



Harriet Martineau,  
British author

Her Forest and Game Law Tales, 1845-46, was followed in 1849 by a History of the Peace, a work embodying the views of the philosophic radicals. This was followed in 1851 by Letters on the Laws of Man's Social Nature. Originally a strict Unitarian, she now revealed herself as an agnostic, a fact which led to a breach with her brother James. A Condensation of Comte's Positive Philosophy, 1853, and an autobiography complete the list of Harriet Martineau's more important works. Other works show little originality of thought and less imagination, but she was possessed of an unusually clear and vigorous intellect, and was a talented expositor and populariser of the opinions of others. She died near Ambleside, June 27, 1876. *Consult* Lives, F. F. Miller, 1884; T. Bosanquet, 1927.

**Martineau, JAMES** (1805-1900). British theologian and philosopher. Born at Norwich, April 21, 1805, on his father's side of Huguenot descent, he received his early education at the local grammar school, and at Bristol.



*James Martineau*

Apprenticed to a civil engineer in 1821, he studied divinity at Manchester College, York, 1822-27, was ordained in 1828, served as a minister, and was professor of mental and moral philosophy and political economy at Manchester New College, 1840-57; professor of mental, moral, and religious philosophy there, 1857-69; and principal, 1869-85. With J. J. Taylor and C. Wicksteed, he edited



Sir Theodore Martin,  
British poet



The Prospective Review, 1845-54. He died Jan. 11, 1900, and was buried in Highgate Cemetery.

A prominent Unitarian, an impressive preacher, and essentially an ethical teacher, eclectic and broadminded, discerning the interdependence of all forms of speculation, he based his intuitionist philosophy (see Intuition) on conceptions of God, freedom, and immortality. Martineau insists that, while prudence is concerned with our welfare, conscience forms character, and pleasure is the fruit of right doing, not its incentive. He won the affection of all who knew him. He wrote *The Rationale of Religious Enquiry*, 1836; *Unitarianism Defended* (with J. H. Thom and H. Giles), 1839; *Studies in Christianity*, 1858; *A Study of Spinoza*, 1882; *Types of Ethical Theory*, 2 vols., 1885; *A Study of Religion*, 2 vols., 1888; and *The Seat of Authority in Religion*, 1890.

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**Martinez de la Rosa, FRANCISCO** (1789-1862). Spanish statesman and author. Born at Granada, March 10, 1789, he entered political life in 1813, and became prime minister in 1822. He was banished after the French occupation in 1823, and lived in Paris, where he resumed his literary work. Prime minister again in 1834, he introduced the statute creating constitutional government, but was compelled to resign the same year. He was ambassador to Paris, 1847-51, and died Feb. 7, 1862. A follower of the French romantics, Martinez wrote dramas, e.g. *Padilla's Widow*, and *The Conspiracy of Venice*, the historical novel *Doña Isabel de Solis*, epigrams, lyrics, etc.

**Martinezia.** Genus of small trees of the family Palmaceae, natives of tropical America. More or less armed with long, sharp spines, they have cylindrical trunks and large leaves broken up into wedge-shaped leaflets. The globular fleshy fruits are yellow or red, and contain a hard seed.

**Martinez Sierra, GREGORIO** (1881-1947). Spanish dramatist. Born in Madrid, May 6, 1881, he was educated at the university there, and joined the Spanish art theatre founded by his master Benavente. His first success as a

dramatist was achieved with *The Cradle Song*, 1911. He wrote some 40 plays and translated or adapted

more than 50 others; many were introduced during the 1920s to British playgoers in the translations of J. G. Underhill and H. Granville-Barker, e.g. *The Kingdom of God*; *The Romantic Young Lady*. In this playwright's treatment of fools, critics discerned a touch of Cervantes. After the civil war of 1936-39 he lived in voluntary exile in Buenos Aires. Returned to Spain in 1947, he died Oct. 1.

**Martin-Harvey, SIR JOHN** (1863-1944). British actor. Born at Wivenhoe, Essex, June 22,



Sir John Martin Harvey, British actor

1863, and educated at King's College School, he first appeared on the stage at 14. In 1882 he joined Irving at the Lyceum, remaining with him for 14 years, and took plays from the Lyceum repertory to the provinces. Under his own management he produced *The Only Way* in 1899; adapted from Dickens's *Tale of Two Cities*, this piece in which Martin Harvey played Sydney Carton established his reputation. He appeared in this part for very many years. He modelled himself on Irving, and added to his repertory such romantic plays as *A Cigarette Maker's Romance*, *The Corsican Brothers*, *The Breed of the Treshams*, *The Lyons Mail*, and *The Bells*. He was for a long time better known and appreciated in the provinces than in London, possibly because of his choice of plays. But in 1912 Reinhardt produced for him *Oedipus Rex* at Covent Garden in strikingly original fashion, and towards the end of the First Great War he scored a success with *The Burgomaster of Stilemonde*. His 1916 revival of *Hamlet*, his third production of that tragedy, was also esteemed for its simple and original staging. One of his last appearances was in *The Boy David*,



G. Martinez Sierra, Spanish dramatist

1936. His wife, Helena (Nina) de Silva (1869-1949), was long his leading lady. Knighted in 1921, he took the hyphenated name of Martin-Harvey. He died May 14, 1944. Consult *Autobiography*, 1933; *The Last Romantic*, M. W. Disher, 1947.

**Martini, FRIEDRICH** (1832-97). Austro-Hungarian inventor. Born at Mehadia, Hungary, he entered the Austrian army, served in the engineers in the Italian campaign of 1859, and then settled as a civil engineer at Frauenfeld, Switzerland. Adapting his invention of a block action breech mechanism to the 7-groove, .45-in. calibre rifle of Henry, he offered the model to the British government, which adopted it in 1871 under the name of Martini-Henry rifle. See *Rifle*.

**Martini, GIAMBATTISTA** (1706-84). Italian musician. A native of Bologna he was born April 24, 1706, and having been ordained became chapel master at the church of S. Francesco there. Besides producing original compositions, he wrote two erudite musical treatises, *Storia della Musica* and *Saggio di Contrappunto*.

**Martini, SIMONE** (c. 1283-1344). Italian painter, commonly but wrongly known as Simone



Simone Martini, Italian painter

Memmi. Born at Siena, he was a pupil of Duccio. The earliest known example of his work is the fresco at Siena of *The Enthroned Virgin and Child*, painted 1315.

Then came the polyptych painted for the church of S. Caterina in Pisa, c. 1320. In 1328 he was at work in the Palazzo Pubblico at Siena on the equestrian portrait of Guidoriccio da Fogliano. His later art may be seen in the frescoes in S. Francesco, Assisi. In 1339 he went to Avignon, where he executed frescoes in the cathedral and the palace of the Popes, and where he met Petrarch and painted the portrait of Laura. He died at Avignon. Of his other works, the most notable are *The Annunciation* (Uffizi Gallery), *S. John the Baptist* (Altenburg Museum), *Christ Carrying His Cross* (Louvre), *The Crucifixion*, *Deposition*, and *Annunciation* (Antwerp Gallery). Martini is remarkable for decorative qualities of colour and line, and as showing a break with Byzantine influence.

**Martinique.** French island in the West Indies, since 1947 an overseas department of France. It is one of the largest of the Windward Islands and lies between the British islands of Dominica and Sta. Lucia. Almost wholly of volcanic origin, it has such well-known volcanic peaks as Vauclain (1,656 ft.), the Pitons de Carbet (3,955 ft.), and Mt. Pelée (*q.v.*) (4,500 ft.), the scene of a disastrous eruption on May 8, 1902. The slopes still retain much virgin forest, and sugar, cacao, coffee, tobacco, and fruit are produced in the fertile valleys. Sugar, rum, and cocoa comprise more than three-quarters of the exports. The chief harbour is Fort-de-France, and the towns are Lamentin and Gros Marne. St. Pierre was the chief town before its destruction in 1902. Discovered by the Spaniards in 1493, Martinique was settled by the French in 1635, and was British, 1794–1802 and 1809–14. The aborigines were exterminated by early settlers, and the inhabitants are chiefly blacks or creoles. The dept. is administered by a governor and council.

In May, 1942, an agreement was reached between American and French authorities concerning the immobilisation of the three Vichy warships that had been stationed at Martinique since June, 1940. The adherence of Martinique to the French committee of national liberation was announced on July 8, 1943. The three warships with twelve tankers and cargo ships in the harbour were placed at the disposal of the Allies; and gold sent to the island after the French surrender in 1940 was found intact. Area of island 385 sq. m. Pop. 246,712.

**Martinmas.** Feast of S. Martin, Nov. 11. It is a quarter day in Scotland. The festival of S. Martin, the patron of reformed drunkards, is probably a survival of the Roman vintage festival, the Vinalia. At Martinmas hiring fairs for servants are held in some parts of England and the Martinmas or

Martlemas ox, or mart, was killed to be salted for winter. In Germany, goose was a Martinmas dish. The spell of fine weather sometimes occurring around this date is called S. Martin's summer.

**Martin's Bank.** English bank, said to be the oldest in the country, now amalgamated with the Bank of Liverpool. Founded by Sir Thomas Gresham c. 1570, it first did business at the sign of the Grasshopper in Lombard Street. It belonged in the 17th cent. to Charles Duncombe, then to Richard Smith, and in 1703 was owned by Thomas Martin and Andrew Stone. After taking the name of Martin's Bank, it became a limited liability company. At the time of the amalgamation in 1918 it had a paid-up capital of £1,000,000, and its head offices were 68, Lombard Street, London, E.C., still the main London office.

**Martlesham.** Village of Suffolk, England, 6 m. E. of Ipswich. Before the Second Great War all new aircraft were officially tested at the adjacent Martlesham aerodrome. It was a U.S. bomber base during the air offensive on Germany, and later became an Air ministry experimental centre.

**Martlet.** Heraldic term for a small bird of the swallow tribe. It is shown without beak or feet, an innovation since the 15th century. In cadency it is the mark of the fourth son and his descendants. See Cadency; Heraldry.

**Martos.** Town of Spain, in the prov. of Jaén. It stands on a castle-crowned hill, 15 m. by rly.



Martos arms

S.W. of Jaén, and carries on a trade in wine, oil, fruit, etc. In the vicinity are sulphur springs and baths. Martos was the Iberian Tucci and the Colonia Augusta Gemella of the Romans. It was taken from the Moors by Ferdinand III. Pop. 19,830.

**Martyn, HENRY (1781–1812).** English missionary. He was born at Truro, Feb. 18, 1781, and edu-



Henry Martyn, English missionary

cated at Cambridge, where he came under the influence of Charles Simson. In 1805 he was appointed chaplain to the East India Company, and devoted the rest of his life to missionary work, translating the N.T. into Hindustani, Hindi, and Persian. He died at Tokat in Asia Minor, Oct. 16, 1812, while on his way back to England.

**Martyn, JOHN (1699–1768).** English botanist. Born in London, Sept. 12, 1699, he was devoted to botanical studies from early youth, and when only 21 years of age translated and elaborated Tournefort's Catalogue of Plants Growing about Paris, though he did not publish it until 1732. Some public lectures delivered by him in London led to an invitation to do similar work at Cambridge. In 1732 Martyn was elected to the chair of botany there, and held it till 1762. He published a flora of Cambridge, 1727, *Tabulae Synopticae Plantarum Officialium*, 1726, and *Historia Plantarum Rariorum*, 1728–37. He died Jan. 29, 1768.

**Martyn, THOMAS (1735–1825).** English botanist. A son of John Martyn, the botanist, he was born at Chelsea, Sept. 23, 1735, and studied at Cambridge, where he succeeded his father as professor of botany in 1762, in which year he took priest's orders. He became the most active agent in popularising the Linnaean system in England. He published *Plantae Cantabrigienses*, 1763, and a new edition of Miller's *Gardeners' Dictionary*—in reality a new work based upon Miller. He was F.R.S., and vice-president of the Linnaean Society. He died June 3, 1825, at Pertonhall, Beds, where he had been rector since 1804.



Thomas Martyn, English botanist

**Martynia.** Genus of herbs of the family Martyniaceae. They are natives of the warmer parts of America, especially Mexico. They have long-stalked, heart-shaped leaves, and tubular yellow, pink, or purplish flowers. The fruit is a



Martos, Spain. View showing the ancient Moorish castle crowning the hill on which the city stands



**Martynia.** The woody hooked capsule of the Mexican plant

large, woody capsule ending in two long curved hooks which catch in the fur or tails of quadrupeds, by which means the seeds are widely distributed. *M. fragrans*, with large red-purple fragrant flowers, is often grown in European gardens.

**Martyr** (Gr., a witness). Person, especially a Christian, who suffers death in testimony to his faith. One who suffers but does not lose his life is usually known as a confessor. The first Christian martyr was Stephen the Deacon, called the Protomartyr.

Apparently martyrs only were at first regarded as saints. Their tombs were held in high honour. When it became possible to erect special buildings for Christian worship, they were usually built over the tombs of martyrs, and the actual tomb was often converted into an altar, or the remains of the martyr were reinterred under the altar. This practice is alluded to in Rev. 6, v. 9; and a survival of it is seen in the placing of relics in the altars of R.C. churches at their consecration. Articles which had belonged to martyrs were regarded as precious relics, and the possession of the body, or part of the body, of a famous martyr at once gave eminence to a church, and later gave rise to pilgrimages. In this way a cultus grew up, which later developed into a general cultus of saints. A town or district in which a martyr had lived or suffered, or which possessed his relics, took him as its patron saint and often adopted his name, as St. Albans and Bury St. Edmunds.

At an early date it became necessary to check the genuineness of alleged cases of martyrdom, and this was known as the vindication of martyrs, which later developed into the official canonisation of saints generally. Rules were laid down restricting the use of the term.

**Martyrology.** In the R.C. Church, a list of martyrs, with notices of their life and death, designed for devotional uses. In monastic institutions such a list is

read from at prime after the prayer, *Deus, qui ad principium*, and followed by the versicle. Precious in the sight of the Lord is the death of His Saints, and a prayer of intercession addressed to the heavenly court. After prime or tierce it was a monastic custom to adjourn to the chapter and to read the martyrology and say prayers that now form part of prime.

All western martyrologies are based upon that attributed to Jerome, which may have been derived from a work used in S. Gregory's time in Rome; that discovered at Ravenna about 850 and known as the Lesser Roman Martyrology; and that attributed to Bede. The standard Roman Martyrology, largely the work of Usuard (c. 875), a French monk, and first printed in 1486, was revised by Baronius in the 16th century, and under Urban VIII in the 17th century. A Cistercian martyrology was issued at Rome in 1733-48. The Menologium of the Eastern Church was compiled in 886 and edited by Cardinal Urbino in 1727. A Syrian martyrology, written about 412, was discovered by W. Wright, and published 1866. Jean Crespin's *Histoire de Martyrs* celebrates the Protestant martyrs of the 16th century; the best known English work of a similar character is the *History of the Acts and Monuments of the Church*, John Foxe, 1563.

**Marvell, ANDREW** (1621-78). English poet, satirist, and politician. Son of Andrew Marvell,



**Andrew Marvell,** English poet

rector of Winestead, in Holderness, Yorkshire, he was born March 31, 1621, and educated at Hull Grammar School and Trinity College, Cambridge. He became in turn tutor, at Nun Appleton, the scene of his lyrical poems, to Mary, daughter of Lord Fairfax and afterwards duchess of Buckingham, and to William Dutton, a nephew of Cromwell, at Windsor. In 1657 he was appointed Milton's colleague in the Latin secretarieship. From Jan., 1669, until his death, he was M.P. for Hull. He died in London, Aug. 16, 1678, and was buried in the old church of S. Giles-in-the-Fields.

Known in his lifetime chiefly as a Cromwellian, as a friend and colleague of Milton, as an M.P., a pamphleteer and a satirist, his

fame as a poet came later. His widow published a collection of his miscellaneous poems in 1681, and an edition including the political satires was issued in 1726. The complete works did not appear until 1776. His poems, especially those on gardens and country life, display an exquisite feeling for nature and language. Those by which he is chiefly remembered are the Horatian Ode to Cromwell, On Appleton House, To His Coy Mistress, Thoughts in a Garden, and The Nymph Regretting the Loss of her Fawn. In his satires he tended to distinguish between Charles I and his advisers; he attacked Clarendon and the court party, and, in Hodge's Vision, bitterly assailed Charles II. He finally condemned the house of Stuart, despaired of Parliament, and favoured a republicanism after the model of Rome and Venice.

The site of the cottage at Highgate in which Marvell lived is marked by a tablet in Waterlow Park. Consult Lives, J. Dove, 1832; A. Birrell, 1905; Works, A. B. Grosart, 4 vols., 1872-75; Poems and Satires, ed. G. A. Aitken, 1892.

**Marwick Head.** Headland of Mainland, one of the Orkney Islands. It is also the name of a hamlet in Lewis, 8 m. from Stornaway.

**Marx, HEINRICH KARL** (1818-83). German economist and the founder of international revolutionary socialism.

Born at Trèves, May 5, 1818, of Jewish origin, he was educated at the universities of Bonn and Berlin, where he studied history and philosophy. Giving up his first idea of an academic life, he became in 1842 editor of the *Rhenish Gazette*, a journal whose advanced views led to its suppression by the authorities. In 1843-45 he was in Paris, engaged in literary work, and formed his lifelong friendship with Engels (q.v.). Expelled from Paris as a dangerous person, he settled at Brussels, where with Engels he drew up, in 1847, the manifesto of the Communist Party which may be regarded as the foundation of modern socialism.

In 1848 Marx returned to Germany to take part in the revolutionary outbreaks of that year in the Rhine country, but all the movements ended in failure, and in 1849 Marx migrated to London,



**Karl Marx,** German economist

where he spent the rest of his life, and where he took an active part in founding and directing the affairs of the International Working Men's Association, which came to an end in 1873. In 1867 appeared the first volume of Marx's work, *Capital*, and two further volumes appeared after his death, which took place in London, March 14, 1883.

Marx was a leading exponent of what is known as the materialist conception of history, i.e. he believed that the basis of historical development is to be found above all in economic considerations. On the purely economic side he held the theory, not generally accepted, that the value of any article or product depends upon the amount of labour expended on it, as measured by time. Labour, he further taught, produced far more than it consumed, and this surplus value, as he termed it, was inevitably appropriated by the capitalist, who allowed to the labourer in wages only enough to provide for a bare subsistence and enable him to reproduce his kind. From this it followed that there could be nothing in common between the employers and the employed, or proletariat. The latter must recognize this by developing a class-consciousness which, when sufficiently developed, would result in a class war, in which the whole capitalist system would be overthrown.

Many socialists claim that Marx was the first to remove socialism from a humanitarian and place it on a scientific basis. His views form the basis of Marxist Communism, as established in the U.S.S.R. See *Capital*; *Communism*; *International, The*; *Socialism*. Consult *Lives*, E. H. Carr, 1938; C. J. S. Sprigge, 1938; I. Berlin, 1939; *What Marx Really Meant*, G. D. H. Cole, 1934; *The Red Prussian*, L. Schwarzschild, 1948.

**Marx, Wilhelm** (1863-1946). German statesman. He was born at Cologne, Jan. 15, 1863, studied law at Bonn, 1881-84, became a deputy judge in 1888, a county judge in 1894, and, in 1921, president of a senate of the Kammergericht, Prussia's highest court, in Berlin. A member of the Roman Catholic party, and of the Prussian diet from 1899 to 1918, of the Reichstag from 1910 to 1918, and again from 1919 until 1933, Marx was appointed Reich chancellor, with a cabinet of the moderate bourgeois parties, for the first time in Nov., 1923. He resigned in Jan., 1925; was re-appointed in May, 1926, and again resigned in June, 1928. In the interval he had stood

for the Reich presidency, as candidate of the left, in the spring of 1925, but had been defeated by Hindenburg. In 1926 Marx was Reich minister of justice, and in 1928 he resigned the chairmanship of the Centre party. In 1933, after the abolition of his party by Hitler, he retired from public life, in which he had been known as an honest mediator, but never as an innovator. He died in 1946 near his native town.

**Marx Brothers.** Name of a Jewish-American family of film comedians. Arthur (Harpo) born Nov. 21, 1893, Julius (Groucho) born Oct. 2, 1895, Leonard (Chico) born May 22, 1891, and Herbert (Zeppo) born February 25, 1901, formed a troupe and became famous as the Four Marx Brothers, though their number was later reduced to three by the retirement of Zeppo, whose last film was *Duck Soup*. Their reputation was based upon their unusual form of wit, the essence of which was a serious treatment of illogical situations accompanied by clowning, verbal sallies, and musical interludes. Their first film *Coconuts*, which appeared in 1929, was succeeded by *Animal Crackers*, 1931; *Horse Feathers*, 1933; *Duck Soup*, 1934; *A Night at the Opera*, 1936; *A Day at the Races*, 1937; *The Big Store*, 1941; *A Night in Casablanca*, 1946.

**Mary.** A feminine Christian name. Its meaning is somewhat doubtful, but its origin is the Hebrew Miriam, generally taken to mean bitterness, though some trace it to the Egyptian Mer Amon, beloved of (the god) Amon. Owing to its having been the name of the Virgin Mother, it has always been, in Christian communities, the most popular feminine Christian name, while in R.C. countries it is often given to men. The Greek and Latin form is Maria. The French is Marie.

**Mary** (Heb., Miriam). Saint and virgin, the mother of Jesus Christ, usually called the Blessed Virgin Mary. Sister of Mary, wife of Alphaeus, she was espoused to Joseph, a carpenter, of Nazareth. Being told by the angel Gabriel that she should become the virgin mother of the Son of God, and greeted with the words, Hail, thou art highly favoured, she replied with submission: Behold the handmaid of the Lord; be it unto me according to thy word. To her kinswoman, Elizabeth, mother of John the Baptist, recalling the song of Hannah (1 Sam. 2), she expressed her joy in the words of

the Magnificat (*q.v.*). She went with Joseph to Bethlehem, and there gave birth to Christ.

At Jerusalem, when Jesus was 12 years old, on the occasion of the Passover, Mary and Joseph found Him in the Temple, hearing and asking questions of the doctors. Mary was present at the marriage feast at Cana; at Capernaum; on Calvary, where Jesus committed her to the care of S. John, and with the disciples at prayer after the Ascension (Matt. 1 and 2; Luke 1 and 2; Mark 3; John 19; Acts 1). According to tradition Mary died at Jerusalem. Her tomb, it is said, was found vacant; hence the R.C. feast of the Assumption.

Since ancient times much discussion has surrounded the problem whether Mary had other children besides Jesus (see Matt. 12 and 13; Mark 3 and 6; Luke 1 and 2; John 2 and 7; Acts 1; 1 Cor. 15). Of three main views, the Hieronymian, held by Jerome, regards the "brethren" as cousins, sons of Mary, wife of Alphaeus or Clopas; that of Epiphanius, held by the Eastern Church, and the most ancient, that they were sons of Joseph by a former wife; and that held by Helvidius, that they were born to Mary and Joseph after Jesus. Much depends on the interpretation of the word "brethren." The title *Theotokos*, Mother of God, has been applied to Mary since the council of Ephesus, 431. See *Annunciation*; *Assumption*; *Immaculate Conception*; *Incarnation*; *Jesus*; *Madonna*; *Mariolatry*.

**Mary I** (1516-58). Queen of England. The daughter of Henry VIII and Catherine of Aragon, she was born at Greenwich, Feb. 18, 1516. Brought up as heir to the throne, she was harshly treated by her father after his divorce of Catherine, and was even forced to sign a declaration acknowledging the union of her parents to have been illegal, and renouncing the authority of the pope. She remained faithful, however, to the R.C. religion, living in retirement chiefly at Hunsdon and Kenninghall, until the death of Edward VI on July 6, 1553. Despite the efforts of the duke of Northumberland to secure the succession for Lady Jane Grey (*q.v.*), Mary had popular support, gathered a force from E. Anglia, and was proclaimed queen in London, July 19.

She behaved at first with leniency. Her reign was inaugurated by Acts of parliament declaring her legitimacy, restoring the Latin Mass and the celibacy of the clergy,

and abolishing the title of supreme head of the Church which Henry had assumed. New bishops were consecrated, and by Dec., 1554, the reconciliation with Rome was virtually complete. In the face of strong popular opposition, Mary married Philip II of Spain, July, 1554. The rebellion of Sir Thomas Wyatt (*q.v.*) had led to the execution of Lady Jane Grey in Feb.

A stern persecution of Protestants began in 1555. The queen, embittered perhaps by her early life, the failure of her marriage, ill-health, and childlessness must bear some responsibility for the persecutions which brought some 300 persons to the stake during the last three years of her reign, notably the bishops Hooper, Latimer, Cranmer, and Ridley; but they were not so much personal victims of "Bloody Mary" as victims of the abrupt and ill-adjusted return to the old laws against heresy. Without the worldly wisdom of her half-sister Elizabeth, Mary had far deeper convictions. The final blow in an unhappy life was the loss of Calais to the French. Shortly afterwards Mary died, Nov. 17, 1558. See England: History.

**Bibliography.** Privy Purse Expenses of the Princess Mary, with Memoir by Sir F. Madden, 1831; History of Mary I, J. M. Stone, 1901; Philip and Mary, J. B. Mullinger, Cambridge Modern History, vol. ii, 1904; Two English Queens and Philip, M. A. S. Hume, 1908; The Reign of Mary Tudor, J. A. Froude, 1910; Mary Tudor, B. White, 1935.

**Mary II** (1662-94). Queen of England. The elder daughter of James, duke of York, afterwards



Mary I,  
Queen of England  
After Holbein

then of Scotland. Crowned April 11, Mary was sovereign equally with her husband. The dignity of her private life and her staunch Protestantism made her respected, while her conduct of affairs while William was abroad showed spirit and shrewdness. On Dec. 28, 1694, Mary died of smallpox, and was buried in Westminster Abbey. She was childless. Consult The Third Mary Stuart, M. Bowen, 1929.

**Mary** (1542-87). Queen of Scots. Born at Linlithgow, Dec. 8, 1542, six days before the death of her father, James V, she then became queen of Scotland. In 1547 Somerset sought to compel the Scots to give their infant queen in marriage to Edward VI of England. To escape this Mary was shipped off to France, where she was brought up at the court under the charge of the Guises, the kinsfolk of her mother, Mary of Lorraine, who remained in Scotland and ruled on the child's behalf. In 1558 Mary was married to the dauphin Francis, who succeeded to the French throne in 1559, but died next year.

In 1561 Mary returned from France to a Scotland dominated by John Knox, in whose eyes she was a subject not for sympathy but for discipline, by reason especially of her loyalty to the R.C. religion, in which she had been brought up. Mary was left to fight her own battles and to select a husband from a crowd of suitors. She chose her cousin Henry Stuart, Lord Darnley, whom she married July 29, 1565.

Finding Darnley a broken reed, she gave all her confidence to her secretary, David Rizzio. The nobles, led by Morton, made ready use of Darnley's jealousy; and on March 9, 1566, conspirators murdered the secretary in the queen's presence in Holyrood Palace. Mary never forgave her husband, although there was a formal reconciliation after the birth on June 19 of her child, who afterwards became James VI. On Feb. 10, 1567, when Darnley was lying ill at a house called Kirk o' Field, near Edinburgh, and Mary was absent attending marriage festivities at Holyrood Palace, the house was blown up and the prince murdered. It has never been conclusively

proved that Mary had a hand in framing the murder plot; but that she knew that murder was afoot, and that Bothwell was the arch-conspirator, there is little question.

Bothwell was merely subjected to a mock trial, and acquitted. On April 24, he captured the queen herself after a barely formal show of resistance, and on May 15, after he had divorced his wife, Mary married him. The nobles rose in arms. At Carberry Hill, June 15, Bothwell escaped and fled the country, while Mary surrendered to the lords, by whom she was imprisoned in Loch Leven castle and compelled to abdicate in favour of James VI on July 24. On May 2, 1568, Mary escaped from Loch Leven, but only a few devoted loyalists gathered to her standard. They were defeated at Langside on May 13 by the regent Moray, and Mary escaped to England.

Elizabeth was guided by policy, not by generosity, and Mary was held in custody. A commission sat at York, nominally to hear the defence of the Scots lords for their rebellion, actually in order that their charges against Mary might be published. The commission was closed without giving her any opportunity of rebutting the evidence, and then for 18 years Elizabeth kept her a prisoner; while Roman Catholics formed plot after plot to liberate her and set her on the throne of England.



From a portrait  
of Mary Queen of  
Scots at Hardwicke  
Hall



MARY II  
After Wissing

difficult position by the events of 1688, she appears to have sympathised with her husband rather than with her father; at all events she followed William to England in 1689, and the pair were proclaimed king and queen of England and



to which, if the marriage of Anne Boleyn (*q.v.*) to Henry VIII was really invalid, she had an irrefutable claim on the score of descent.

Each plot was detected, but without investigation of Mary's complicity; since neither her acquittal nor her condemnation would have suited Elizabeth's plans. But when war with Spain had actually been declared in 1586, Elizabeth's secretary, Walsingham, was given a free hand. The strict supervision of Mary's correspondence was ostensibly withdrawn, but really maintained more closely than ever. The plot of Anthony Babington (*q.v.*) was revealed. At the trial, letters of Mary's were produced which, if genuine, were absolutely damning; but whether the damning parts of them were genuine or forged no man will ever know. Mary was found guilty on Oct. 25, and parliament demanded her execution. Elizabeth, after efforts at evasion, sealed the death warrant, Feb. 1, 1587. The council, without giving her time to recall it, put it in execution, and on Feb. 8 Mary was beheaded at Fotheringhay. Her beauty has become legendary, and of her courage there is ample evidence; but a passionate nature led her to commit such blunders that the interest in her career now belongs as much to romance as to constitutional history. See Bothwell; Casket Letters; Darnley; Holyrood; Knox. J.; Scotland.

**Bibliography.** The career of Mary has been used in stories, poems, and dramas. Among the last may be mentioned Schiller's *Maria Stuart*; Swinburne's trilogy, *Chastelard*, *Bothwell*, and *Mary Stuart*; Drinkwater's *Mary Stuart*; Gordon Daviot's *Queen of Scots*. Lives and studies include those by D. Hay Fleming, 1897; E. Linklater, 1933; M. Bowen, 1934; M. P. Willcocks, 1939. Consult also *The Casket Letters* and M. Q. of S., T. F. Henderson, 2nd ed. 1890; *Love Affairs*, M. A. S. Hume, 1903; *The Mystery of M. Q. of S.*, A. Lang, new ed. 1904; *Trial*, ed. A. F. Steuart, 1923; *Persecution of M. S.*, Sir E. A. Parry, 1931; *In My End Is My Beginning*, M. Baring, 1931.

**Mary (1658-1718).** Queen of James II of Great Britain, known as Mary of Modena. Born at Modena, Oct. 5, 1658, she was the only daughter of the duke of Modena, a member of the Este

family, and was baptized Mary Beatrice Anne Margaret Isabel. Largely owing to the efforts of Louis XIV, she became by proxy in Sept., 1673, the second wife of James, duke of York. She went at once to England, where she lived until 1688, being regarded as a papal agent, and being certainly a strong and not very discreet Roman Catholic. In 1688 she fled to France. After the death of her husband, Sept. 6, 1701, Mary entered a convent, where she died May 7, 1718. Her surviving children were James Edward, the old pretender, and a daughter, Louisa.

**Mary (b. 1867).** Queen consort of George V of Great Britain, Ireland, and the British Dominions



*Mary II*

Overseas, and Empress of India. Eldest child and only daughter of the duke of Teck and his wife, Mary (daughter of the 1st duke of Cambridge, and granddaughter of George III), she was born at Kensington Palace, May 26, 1867, and baptized Victoria Mary Augusta Louise Olga Pauline Claudine Agnes. She was known in the family circle as May.

During her girlhood she lived mostly at Kensington until 1883, then, after a sojourn in Florence, the family moved to White Lodge, Richmond Park. In 1891 she was betrothed to the duke of Clarence, the heir (after his father, the prince of Wales) to the British throne. He died, Jan. 14, 1892; and on May 3, 1893 the engagement of the princess to his brother, the duke of York, was announced. The marriage was celebrated July 6, 1893, in the chapel of St. James's Palace. The duke and duchess lived at York House, London and York Cottage, Sandringham. On his father's accession as Edward

VII, 1901, the duke of York became duke of Cornwall, and, in Nov., prince of Wales.

The princess of Wales, now residing at Marlborough House, became widely known to the country by her performance of many public duties. With her husband she made a tour of the Empire, 1901, visiting Australia, 1906-07, and Canada, 1908. Crowned as queen consort in Westminster Abbey, June 22, 1911, she was crowned empress of India at Delhi in Dec. the same year.

During the First Great War, Queen Mary performed invaluable work for the women's organizations, e.g. the Queen's Work for Women Fund, 1914, Queen Mary's Needlework Guild (founded in the same year); and throughout that arduous period, 1914-18, she maintained her practical philanthropy, and her sympathy was shown on innumerable occasions. During the king's illness of 1928-29 she presided over the council of regency. In 1934 she named and launched the liner named in her honour, and in 1935 shared with the king the many engagements connected with the Silver Jubilee of the king's reign. After his death in 1936, when she returned to Marlborough House, she continued to appear at public ceremonies and, relieved of prime responsibilities, became a frequent visitor to theatres and concerts, and also spent much time in the company of her grandchildren. In the abdication crisis of Dec. 1936, she took no public part.

During the Second Great War she lived at Badminton, Glos., home of the duke and duchess of Beaufort, returning to Marlborough House in 1945.

One of the most beloved of British queen consorts, she endeared herself to her subjects by her many charitable acts and sense of duty to the country's welfare during periods of the greatest crises in its history. Her consistently regal appearance and deportment never failed to arouse admiring comment. An authority on *objets d'art*, she was a great collector of furniture and china. A needlewoman of skill, she presented to the prime minister in 1950 a carpet in gros point, on which she had been working since 1941, to be sold for dollars. Thousands of people saw it when it was exhibited in the U.K., the U.S.A., and Canada before it was sold. See *Dolls' House*; George V. Consult *Lives*, C. Cavendish, 1930; Sir G. Arthur, 1935.



**Mary of Modena, Queen of England**



**Mary** (1515-60). Queen of James V of Scotland, and known as Mary of Guise and Mary of Lorraine. A daughter of Claude, duke



Mary of Guise,  
Queen of Scotland  
After Jameson

of Guise, she was born at Bar-le-Duc, Nov. 22, 1515. In 1534 she married Louis, duke of Orleans, who died three years later. Henry VIII sued for her hand, but in 1538 she became the wife of James V, to whom she bore two sons, who died in infancy, and a daughter, Mary. James died in 1542, and their daughter became queen, with Cardinal Beaton as regent. Beaton fell, and Mary and her daughter escaped to Stirling, where the child was crowned.

Mary of Guise now played a prominent part in Scottish politics, and formed a close alliance with France. Her chief obstacle was James, earl of Arran, now regent, who looked to England for support. In 1554 he resigned and Mary became regent. Able and honest, she was not popular, and had a bitter enemy in Knox. In 1559 she attempted to break the Protestant party by placing a garrison in Perth, but her action was ill-timed; she was forced to flee to Dunbar, and at Edinburgh was declared deposed, Oct. 21. Mary died in Edinburgh, June 11, 1560.

**Mary** (b. 1897). British princess, known as the Princess Royal, countess of Harewood. Only daughter of King George V and Queen Mary, she was born at York Cottage, Sandringham, April 25, 1897, and christened Victoria Alexandra Alice Mary. Her education was supervised by Mlle. Dussau, and during the First Great War she trained as a nurse at the Great Ormond St. hospital for children. She later became president of the girl guides. On Feb. 28, 1922, she married Viscount Lascelles, who in 1929 became 6th earl of Harewood (q.v.). Two sons were born to them: George Henry Hubert, 7th earl (b. Feb. 7, 1923), and Gerald David (b. Aug. 21, 1924). On the death of Princess Louise she was created Princess Royal, Jan. 1, 1932. She later became controller-commandant of the A.T.S. (maj.-gen. of W.R.A.C.). During the visit of George VI to N. Africa in the Second Great War she was a councillor of state. She resided mostly at Harewood House.

**Mary Barton.** Novel of Lancashire life by Elizabeth Cleghorn Gaskell, first published in 1848. It is a sympathetically told story of working-class life in Manchester during a period of distress. This was Mrs. Gaskell's first novel, written as a distraction after the death of an infant son.

**Maryborough.** English name of the town in Laoighis co. called by the Irish Port Laoighise (q.v.).

**Maryborough.** Town of Victoria, Australia, in Talbot co. It is situated in the Loddon valley, 118 m. by rly. N.W. of Melbourne, at an alt. of 1,787 ft. There are rly. workshops and iron-foundries. Gold is mined locally. Pop. 5,900.

**Maryborough.** Port in Queensland, Australia. It is 20 m. from the mouth of the Mary river, 167 m. N. of Brisbane, and on the coastal rly. linking Brisbane to Rockhampton. It is the outlet of the Gympie gold and Burrum coal fields, and has the biggest iron and steel foundries in Queensland. Timber is exported. Pop. 14,500.

**Mary Celeste.** A vessel concerned in a mystery of the sea. On Dec. 5, 1872, the brig *Dei Gratia*, commanded by Captain Morehouse, sighted the brigantine *Mary Celeste* about 130 m. off the coast of Portugal. Morehouse was a friend of Capt. Briggs, master of the *Mary Celeste*, and seeing no one at the wheel, he boarded the vessel. No one was on board, and there was no sign of disorder. The last entry in the log book was dated Nov. 24; but a slate in the captain's cabin recorded that on the 25th the *Mary Celeste* was passing N. of the island of Santa Maria in the Azores. During ten days she had to all appearances held her course for 750 m. unsteered.



Mary,  
Princess Royal  
Countess of  
Harewood

Morehouse took the ship in tow and continued his voyage to Gibraltar. A cutlass was found, with what might have been bloodstains, and on the deck some marks which looked like spots of blood, while there were curious cuts on the bows. Briggs had been accompanied by his wife and daughter, and the ship carried a crew of seven. It was stated that the ship's boat was hanging on the davits when she was found.

Many explanations were advanced to account for the mystery. The cuts on the bows were shown to have no significance, and the stains on the cutlass were proved not to be blood. In 1929 Laurence Keating published a solution, *The Great Mary Celeste Hoax*, which was based on documentary evidence. According to his account Morehouse lent Briggs three of his crew at New York, the others in the *Mary Celeste* being a rough lot. One of the crew, Venholdt, soon got into a fight with the mate Hullock, who seems to have taken command of the vessel. Mrs. Briggs was accidentally killed by a piano falling upon her, and was buried at sea by the mate, contrary to the captain's wishes. Briggs began to drink heavily and disappeared one night after fighting with the mate. Hullock and Venholdt again came into conflict, and the latter went overboard and was never seen again. At Santa Maria the mate and two others deserted, taking the log containing Briggs's complaints, and when the *Dei Gratia* arrived at Santa Maria the *Mary Celeste* was in charge of the three members lent by Morehouse and the English cook Pemberton. Morehouse invented the story of finding a deserted vessel to avoid inquiries.

In 1885 the *Mary Celeste* was wrecked off Cienfuegos, Cuba, in suspicious circumstances.

**Maryhill.** Suburb of Glasgow, Scotland. Lying N. of the Kelvin, it is an industrial and working-class residential district, being distinguished by its long streets of "closes" or tenements. Here is Maryhill barracks, the depot of the Highland Light Infantry. Maryhill gives its name to a borough constituency of Glasgow including Ruchill.

**Maryland.** A twin-engined bomber designed by Glenn Martin (U.S.A.) for service in the Second Great War. It achieved particular success in the early Mediterranean campaigns of the R.A.F., proving superior in performance to current Italian fighters. Powered by two

Pratt and Whitney Twin Wasp radial engines of 1,050 h.p., the Maryland carried a crew of three and 1,250 lb. of bombs at a maximum speed of 304 m.p.h. Wing span was 61 ft. 4 ins., length 46 ft. 8 ins.

**Maryland.** Alternative name given in the U.S.A. to the old German tune to which the song *Der Tannenbaum* was traditionally sung around the family Christmas tree. The tune was used for a song, Maryland, my Maryland, written by J. R. Randall, of Baltimore, in 1861, and was later popular as a hymn-tune. The same tune was adopted in the U.K. for the Socialist song *The Red Flag*. See *Red Flag*, *The*.

**Maryland.** State of the U.S.A., one of the thirteen original states of the Union. The area is 10,577 sq. m., and it is divided into two parts by Chesapeake Bay. In the S. it has a coast-line on the Atlantic, but farther N. Delaware divides it from the sea. Another boundary is the estuary of the Potomac. In the E. the surface is low and marshy, but to the W. it is hilly, being crossed by ridges of the Alleghenies, and having some peaks over 3,000 ft. high. Agriculturally, Maryland is known as the "special crop" state, many farmers experimenting in diversified crops. It is famous for strawberries, tomatoes, spinach, and tobacco. The capital is Annapolis, but Baltimore is much the largest place. Other cities are Cumberland, Hagerstown, and Frederick. The government is carried on by a governor and a general assembly, consisting of a senate and a house of delegates. Two senators and six representatives are sent to Congress. An inter-racial commission, appointed by the governor and consisting of white and coloured members, provides for the welfare of negroes, who form about one-fifteenth of the total pop. of 1,821,244.

Maryland was settled by R.C.s in Charles I's reign and remains a centre of American Roman Catholicism, the first American cardinal, James Gibbons, having been born in Baltimore. In the first U.S. census, 1790, 93 per cent were of British stock. In the 1930 census only 977 were registered as foreign-born. Two famous Maryland writers are H. L. Mencken and Upton Sinclair. The walls of Johns Hopkins University, Baltimore, have murals representing various beautiful Maryland women, the gift of an anonymous donor.

**Marylebone.** London place-name. Popularly used for a metropolitan bor. of London, the title being officially St. Marylebone (q.v.), Marylebone has given its name to a rly. terminus (originally of the Great Central rly., later of the L.N.E.R.). Marylebone Road is a main thoroughfare from Edgware Rd. to Gt. Portland St. Marylebone Park was the former name of Regent's Park, which is entirely within the bor. *Pron.* Marri-lebun.

**Marylebone Cricket Club.** English cricket club, regarded as the governing body of the game in England, and known as the M.C.C. It dates from 1787, when some members of the White Conduit club began to play on Lord's ground in Dorset Square, and called themselves the Marylebone club. In 1788 the rules of cricket were revised by the club, and since then it has been generally accepted as the controlling body. All alterations in, and additions to, the laws of the game must be accepted by a two-thirds majority of the members present at an annual meeting of the M.C.C. The club, which owns Lord's cricket ground, is governed by a president, treasurer, and committee of sixteen. The M.C.C. is responsible for the selection of representative English teams. Presidents have included Lord Hawke and Sir Pelham Warner. See *Cricket*; *Lord's*.

**Mary Magdalene.** Name of the woman mentioned with others in the N.T. as being healed of evil spirits and ministering to Christ of her substance. She was present at the Crucifixion, and it was to her that Jesus is said to have first appeared after the Resurrection. The name is generally understood as indicating that she was a native of Magdala, the modern El Mejdal, on the W. shore of the Sea of Galilee. Tradition identified Mary of Magdala with the unnamed penitent of S. Luke who anointed Christ with the spikenard. Gregory the Great decided that the two women were identical; on his authority the feast of S. Mary Magdalene was arranged, but the identity is rejected by the majority of modern critics. David Smith, however, in his book, *In the Days of His Flesh*, identifies Mary of Magdala with the unnamed penitent and with Mary of Bethany, sister of Martha and Lazarus.

**Maryport.** Seaport, market town, and urban dist. of Cumberland. It stands at the mouth of the river Ellen, 28 m. by rly. from Carlisle. The principal buildings

include the churches of S. Mary and Christ Church. The chief industries are food canning, coal mining, the manufacture of buttons, children's wear, surgical instruments, furniture, and electrical equipment. Originally known as Ellenfoot, the town was renamed Maryport in 1750 because Mary Queen of Scots landed here in 1568. In 1750 also the building of the harbour was begun, and docks were added to it in the 19th century. Near was a Roman station, in which many remains have been found. Market day, Fri. Pop. 11,820.

**Mary Rose.** Fantasy in 3 acts by J. M. Barrie. This imaginative piece with its "fey" atmosphere is a notable example of Barrie's art. The heroine "disappears" into the realms of enchantment during a visit to a Scottish island (The Island which Likes to be Visited), and on her return home many years later is represented as untouched by age or experience. Produced at the Haymarket Theatre, London, April 22, 1920, with incidental music by Norman O'Neill, it ran for 399 performances. Fay Compton played Mary Rose, and Robert Lorraine the double part of her husband and soldier son. It was revived in 1926 and 1929.

**Mary Ward Settlement.** Social welfare institute in Tavistock Place, St. Pancras, London. Until 1920 it was known as the Passmore Edwards Settlement, the name being changed to commemorate Mrs. Humphry Ward (q.v.), through whom John Passmore Edwards (q.v.) founded the settlement in 1897. It now comprises schools for defective children, evening play centres, boys' and girls' clubs, a free legal advice centre, lectures, recreational gatherings, and an evening institute. See *Settlement*.

**Mazipan** (Ger.). Sweetmeat made of ground almonds and sugar in about equal proportions, bound with eggs and flavoured with lemon juice, rose water, or orange flower water. It is used as an icing for cakes and as a sweetmeat, and is often called almond paste. Marchpane is the older English name.

**Masaccio** (1401-c. 1428). Florentine painter. Born at Castel San Giovanni di Valdarno, Dec. 21, 1401, he was named Tommaso Guidi, but is invariably known by his nickname Masaccio, meaning loutish Tom. In 1417, commissioned to decorate a chapel for Cardinal San Clemente, he painted a Crucifixion and scenes from the lives of SS. Catherine and Clement.

Between 1423 and 1428 he painted 12 frescoes in the Brancacci Chapel in the Carmine, representing scenes from the Bible. He died in Rome about 1428. His Madonna and Child with Angels was acquired for the National Gallery, London, 1916.

**Masai.** People of Nilotic negro stock in E. equatorial Africa. A sinewy, round-headed, thin-lipped people, with Caucasoid nose, they derive their predatory temperament and pastoral habit from Hamitic contact. The warriors, wearing skin shoulder-flaps and ostrich-feather aureoles, are armed with thrusting spears, knobkerries, and oval shields. The village stockades resemble Kafir kraals. Marriage is deferred until after the warrior age. Immigrant from the Bari-Latuka region, they ranged from Mt. Kenya to beyond Kilimanjaro, where some still remain in Tanganyika territory. They frequently attacked caravans and expeditions, and those in the colony of Kenya have been removed from the Leikipia plain to a reservation between Nairobi and the S. boundary. The region inhabited by them is known as Masailand. See Africa, colour plate; consult The Masai, their Language and Folklore, A. C. Hollis, 1905.

**Masaniello** (1622-47). Name given to the Neapolitan patriot, Tommaso Aniello. A fisherman of Amalfi, he became leader of the populace when they rose against the Spanish tyranny in Naples, July 7, 1647. Count d'Arcos, the viceroy, was driven to Castelnovo, and for six days Masaniello was ruler of the city. He tried to moderate the fury of the mob and restrain their excesses. On July 13, d'Arcos agreed to the demands of the insurgents, and three days later Masaniello was murdered and mutilated by his old adherents. His story forms the theme of Auber's opera, *La Muette de Portici*.

**Masaryk, JAN GARRIGUE** (1886-1948). The son of Thomas Masaryk, he entered the Czechoslovak foreign service in 1918, and served in the London and Washington embassies before becoming ambassador to Great Britain in 1925. In 1939 he resigned,

and in 1940 became foreign minister in the provisional Czechoslovak government which was set up in London. He was deputy prime

minister, 1941-45, during which time he became widely known to British listeners by his broadcasts in the B.B.C. Brains Trust. With the re-establishment of the Czechoslovak republic he became foreign minister, and led his country's delegations to the San Francisco conference of 1945 and to the Paris peace conference; he was retained in his post in the government formed after the Communist *coup d'état*, Feb., 1948. He committed suicide (to all appearances) by throwing himself from a window, March 10.

**Masaryk, THOMAS GARRIGUE** (1850-1937). Man of letters and first president of the republic of



T. G. Masaryk,  
President of  
Czechoslovakia

Czech school at Czejkovice and the German school at Hustopech, and worked as a locksmith in Vienna and a blacksmith in Moravia. In 1865 he was able to resume his studies, first at Brno, and later at Vienna, where he graduated, and Leipzig. In 1882 he became a professor at Prague university.

He was elected to the Austrian Reichsrath in 1891, but resigned two years later. Re-elected in 1907, he denounced the conduct of Serbo-Croat affairs by the Austrians, especially with regard to Bosnia and Herzegovina. When the First Great War broke out he escaped from Austria to campaign for a free Czechoslovakia, founding with Dr. Benes and General Stefanik the Czechoslovak National Council which in 1918 was recognized as the country's provisional government. In 1915 he took up an appointment at King's College, London, and his writings proved so dangerous to the Austrians that he was condemned to death in his absence, and his property confiscated. He was elected president of the newly-formed Czechoslovak republic, Nov. 14, 1918, and re-elected in 1920, 1927, and 1934. but in Dec., 1935, his failing health induced him to resign. He died Sept. 14, 1937. The whole period of his country's independence drew inspiration from him. He encouraged his compatriots to make their country an observatory from which

to watch developments in all parts of the world. His writings, in Czech and German, include Blaise Pascal, 1883; *Slavic Studies*, 1889; *Russia and Europe*, 1913; *The World Revolution*, 1925. His war memoirs appeared in 1925. See Czechoslovakia. Consult President Masaryk Tells His Story, recounted by Karel Capek, 1933; *Lives*, D. A. Lowrie, 1930. E. Ludwig, Eng. trans. J. Murphy, 1936; R. J. Kemer, 1938; V. Cohen, 1941; P. Selver, 1941.

**Masaya.** Town of Nicaragua, capital of the dept. of Masaya. At an alt. of about 3,000 ft., near Lake Masaya, it is 16 m. by rly. S.E. of Managua. The surrounding districts produce tobacco, sugar, coffee, and rice. Pop. 30,372.

**Masbate.** One of the Philippine Islands. Situated W. of Samar and S. of Luzon, it forms, with the adjacent islands, the province of Masbate, which has an area of 1,260 sq. m. With hills rising to 2,500 ft., it has large forest tracts, producing excellent timber. Agriculture is undeveloped, and stock-raising and fishing are the chief industries. Manufactures include mats and sugar sacking, and a fairly large export trade is carried on from Masbate, the capital, and several other good harbours. It was occupied by the Japanese in April, 1942, and liberated when Japanese opposition in the Philippines ceased early in 1945. Pop. of province, 108,800.

**Mascagni, PIETRO** (1863-1945). Italian composer. Born at Leghorn, Dec. 7, 1863, the son of a baker, he



Pietro Mascagni,  
Italian composer

studied music there and at Milan. In 1890, Mascagni leapt suddenly into fame by the production at Rome of the one-act opera *Cavalleria Rusticana*. This won for him worldwide popularity. In 1895 he was made director of the Conservatoire at Pesaro, and after a tour in the U.S.A. as operatic conductor he became a teacher in Rome. His other operas include *L'Amico Fritz*, 1891; *Iris*, 1898. *Parisina*, 1913; and *Nero*, 1935. He died Aug. 2, 1945.

**Mascara.** Town of Algeria. At an alt. of 1,834 ft., 93 m. by rly. S.E. of Oran, it has a large trade in wine, oil, and cereals. Mascara was the residence of Abd-el-Kader who, in 1837, preached the holy war of extermination against the Chris-

tians. It was taken by the French under Bugeaud on May 30, 1841. Pop. 31,842. The name mascara is given to eyelash cosmetic.

**Mascarene.** Collective name for three islands E. of Madagascar, in the Indian Ocean, Mauritius, Réunion, and Rodriguez. Réunion was discovered by the Portuguese Mascarenhas in 1545.

**Mas d'Azil.** A French hamlet near the Pyrenees, remarkable for the discovery by Édouard Piette in 1887 of mesolithic remains. It has a natural limestone tunnel 450 yds. long. See Azilian.

**Masdevallia.** Large genus of epiphytal plants of the family Orchidaceae. They are natives of the mountain regions of tropical America. The leaves are long and leathery, and the very striking flowers are borne singly or in pairs at the summit of long, leafless stalks. Sepals form the showy part, the small petals being concealed.

**Masefield, JOHN EDWARD** (b. 1878). English poet laureate. He was born at Ledbury, June 1,



John Masefield,  
English poet laureate

1878, and spent his early years wandering, as a sailor before the mast, and in varied employment in the U.S.A., gaining the hard experience he was later to write about.

Salt-water Ballads were published in 1902, *A Mainsail Haul*, 1905, his edition of *Dampier's Voyages* in 1906, and thenceforward he pursued literary work. In the First Great War he served with the Red Cross in France and at the Dardanelles.

Many pieces in the volumes of 1902-05 and in *Ballads and Poems*, 1910, were marked by the bold rhythms of the Kipling school. In 1911 reputation came with the first of his long narrative poems, *The Everlasting Mercy*, recounting in rough-and-ready but original and memorable rhyme the story of a village drunkard's conversion. It was followed by similar works, unequal but vivid in style: *The Widow in the Bye-Street*, *The Daffodil Fields*, and *Dauber*.

*Biography*, a less known but truly subjective poem, shows Masefield concerned with that ceaseless striving after an ideal beauty which forms the subject of the series of grave and beautiful sonnets in *Lollingdon Downs*,

1917. With Reynard the Fox, 1919, and *Right Royal*, 1920, vigorous pictures of sport in the English shires, Masefield resumed his narrative genre. Nearly all the volumes to this date have much about ships and the sea. But in the Second Great War no subject inspired him so much as the women's land army. Collected Poems appeared in 1932.



Masdevallia abbreviata. Leaves and flowers of this Peruvian plant

His plays include *The Tragedy of Nan* (in dialect), 1909; *Pompey the Great*, 1910; *Philip the King*, 1914; *Good Friday*, 1916; *The Trial of Jesus*, 1925; *Tristan and Isolt*, 1927. Among novels and adventure stories are *Captain Margaret*, 1908; *Lost Endeavour*, 1910; *Sard Harker*, 1924; *Odtaa*, 1926; *The Bird of Dawning*, 1933; *Dead Ned*, 1938; *New Chum*, 1944. In 1911 came a modest study of Shakespeare. Masefield succeeded *Bridges* as poet laureate in 1930 and was awarded the O.M. in 1935.

Alan Phillips

**Maseru.** District and capital town of Basutoland, S. Africa. The town has a mission station, with industrial school and hospital. Situated near the Caledon river, it is the terminus of a branch rly. to Marseilles, and is 80 m. E. by S. of Bloemfontein.

**Masham.** An urban dist. and market town of the N. Riding of Yorkshire, England. It stands on the Ure, 8 m. N.W. of Ripon, and has a rly. station. The church of S. Mary the Virgin is partly Norman. There is a grammar school founded in the 18th century, and the chief industries are a trade in agricultural produce, and brewing. Market day, Wed. Pop. 1,995.

**Masham, SAMUEL CUNLIFFE-LISTER, 1st BARON** (1815-1906). British inventor and manufacturer. The son of a Yorkshire squire, Ellis Cunliffe, afterwards Cunliffe-Lister-Kay, he was born at Calverley Hall, near Bradford, Jan. 1, 1815. He began business in Liverpool, afterwards setting up a worsted mill at Manningham with his brother, and later was

associated with Isaac Holden. He perfected a compressed air brake for rlys., a silk-combing machine, a velvet loom, and a method of utilising silk waste. In 1891 he was made a baron, and he died Feb. 2, 1906. At one time possessed of great wealth, he bought Swinton Park, Jervaulx Abbey, and extensive estates in the West Riding. He was a strong tariff reformer. *Pron.* Mass-ham.

**Masham, ABIGAIL** (d. 1734). English courtier. The daughter of Francis Hill, a London merchant, she was appointed woman of the bedchamber to Queen Anne, through the influence of her cousin, the duchess of Marlborough. In 1707 she privately married Samuel Masham, who was then in attendance on Prince George of Denmark, and was raised to the peerage in 1712 as Baron Masham. The duchess soon found that her cousin was supplanting her in the queen's favour and was assisting her enemy Harley. In the quarrel that ensued Mrs. Masham was victorious, and her power increased. She was driven into retirement with her husband by Anne's death in 1714. She died Dec. 6, 1734.

**Mashie.** Golfer's iron club, intermediate in length of shaft and loft of face between the iron and niblick. Its main purpose is for comparatively short approaches, so played that the ball will stop on the green near the pin. See *Golf*.

**Mashonaland.** District of S. Africa, now part of Rhodesia. It is named after the Mashonas. Lying to the N.E. of Matabeleland, it is a mountainous area, but is rich in minerals, gold having been mined here in ancient times, and contains excellent pasture land. Salisbury is the chief town; others are Hartley, Gatooma, Umtali, and Victoria. Mashonaland was included in the grant made in 1889 to the British South Africa Co., and in 1890 a force was sent to take possession of it. In 1893 the inroads of the warlike Matabele, long the enemies of the more peaceful Mashonas, led to the Matabele War. In 1896 the Mashonas rebelled, and for over a year the rising continued, but in the end it was put down, and Mashonaland became soon an integral part of Rhodesia. See *British S. Africa Co.*; *Matabeleland*; *Rhodesia*.

**Masinissa** (c. 238-148 B.C.). Numidian king. Son of the king of the Massylians, or E. Numidians, he was educated at Carthage, and

in the second Punic war at first fought for the Carthaginians, but after their defeat deserted to the Romans. He was hard pressed both by the Carthaginians and by another Numidian king, Syphax, but the arrival of Scipio in Africa in 204 B.C. brought relief, and Masinissa was able to play an important part in the battle of Zama, 202, in which the Carthaginians were completely defeated. As a reward for his services to the Roman cause, he received the territory of Syphax, and thus became king of all Numidia. See *Sophonisba*.

**Mask** (Fr. *masque*, vizor). A covering for the face, assumed either to conceal the features or to represent a character. The hideous masks ceremonially used by many savage peoples are intended to ward off demons, to express totemistic ideas, and to terrify enemies. The faces of the dead were masked by the ancient Egyptians, Mycenaean Greeks, Mexicans, and Peruvians, to preserve them from molestation by evil spirits. In the presentation of the Greek drama every actor wore a mask suited to the character he personified. They were made of bronze or copper, enamelled or painted, and designed to add power to the voice so that the actor could be heard at the farthest limit of the vast theatre. This was effected by fastening the mask to the head with a kind of perwig, which covered the head and left only a circular passage for the voice to sound through, whence was derived the Latin word for a mask, *persona* (*personare*, to sound through).

On the modern stage masks have been discarded by actors with speaking parts, the smaller stage requiring the use of facial expression and of vocal asides, which would have been lost in the immense auditorium of a classic Greek theatre. But masks, especially of grotesque design and representing heads of animals, still figure prominently in pantomime. In Shakespeare's time ladies commonly wore black masks to conceal their identity in public, perhaps always did this in the theatre. Hence, as Nares points out, if a theatrical company had no male actor physically well adapted to impersonate a woman, he could don a mask and yet not be absurdly out of the picture. Thus, in *A Midsummer Night's Dream*, when Flute begs not to play a woman since he has a beard coming, Quince retorts "That's all one: you shall play it in a mask, and you may speak as small as you will."



Masks 1 and 2, Japanese theatrical masks of carved wood. 3, North American Indian mask used in ceremonial dances (Puget Sound, Washington co.)  
1 and 2, Victoria and Albert Museum

In sculpture the word mask is used in several connexions, such as a representation of the human face, whether noble or grotesque, in gargoyles, on tiles fixed at the ends of cornices and eaves, or on the keystone of an arch, and as a cast of a face taken after death. technically a death-mask.

For protective purposes masks have been developed into various forms, e.g. the inhalers used by firemen, miners, and divers when working in smoke or vitiated air or under water, and the gas respirators worn by troops assailed with poisonous fumes. The word mask is also applied by military engineers to a screen provided for a battery, and to earthworks thrown up to protect men when constructing a battery. See *illus. to Actor; Comedy; Harlequin; Masque; Masquerade; Respirator*.

**Mask.** Lough or lake of Eire. It forms part of the boundary between counties Galway and Mayo, and contains about 20 islands. Its length is 12 m., while its breadth varies from 2 to 4 m. Salmon and trout are caught. On the S.E. shore are the ruins of a castle, built in the 13th century and restored by Sir Thomas Bourke in the 17th.

**Maskell, DANIEL** (b. 1908). British lawn-tennis player. He was born in London, April 11, 1908, and on leaving school was attached as a professional to Queen's Club, London. In 1926 he won the British professional lawn-tennis championship, and between that year and 1949 won that title 15 times. In 1927 he won the open professional world championship. For many years he was the official coach to the British Davis and Wightman cup teams.

**Maskelyne, JOHN NEVIL** (1839-1917). British entertainer and illusionist. Born at Cheltenham, Dec. 22, 1839, he was apprenticed to a

watchmaker, but studied conjuring and began entertaining at the age of 16. In 1865 he entered into partnership with one Cooke, exposed the mysteries of the Davenport spiritualistic quacks, and in 1873 moved to London. The partnership, later Maskelyne and Devant, took the Egyptian Hall, Piccadilly, and The Hall of Magic was the scene of ingenious illusions until they moved to St. George's Hall in 1905. Maskelyne died May 18, 1917. An unwavering opponent of frauds perpetrated under the guise of spiritualism, he was never deceived by any pretended medium, whilst the secrets of many of his tricks remain undiscovered.

**Maskelyne, NEVIL** (1732-1811).

British astronomer. Born Oct. 6, 1732, he was educated at Westminster and Cambridge. In 1761 he observed the transit of Venus from St. Helena on behalf of the Royal Society. He was appointed the astronomer royal, 1765, and founded the Nautical Almanac the following year. During his long tenure at Greenwich he also compiled a valuable catalogue of fundamental stars, and introduced systematic publication of results noted at the observatory. He died Feb. 9, 1811.



Nevil Maskelyne, British astronomer After Vanderburgh

**Masks and Faces.** Comedy by Charles Reade and Tom Taylor, founded on the former's novel *Peg Woffington*. Produced Nov. 20, 1852, at The Haymarket, it had a successful run, Mrs. Stirling playing Peg Woffington, Leigh Murray Sir Charles Pomander, and Benjamin Webster Triplet.

**Masochism.** Term in psychology used to denote the converse of sadism (*q.v.*). The word derives from Leopold von Sacher-Masoch, an Austrian novelist, who described the condition.

**Mason.** Worker in building stone. The term is usually applied to artificers who dress or hew blocks of stone into sizes and shapes suitable for building, but it includes those who place the stones in position and erect the buildings. From earliest times the mason's was one of the most important and exclusive crafts. In the Middle Ages expert masons travelled from town to town over Europe. The term is also used for freemason. See *Freemasonry*.



**Mason, ALFRED EDWARD WOODLEY** (1865-1943). British novelist. Born May 7, 1865, he



A. E. W. Mason,  
English novelist

was educated at Dulwich and Trinity College, Oxford. During 1906-10 he was Liberal M.P. for Coventry. His first literary success was *The Courtship of Morrice Buckler*, 1896; it was

followed by a series of books which showed the power to impart movement to a story. This enabled him to achieve success in a series of crime novels, featuring a French detective, Hanaud. Outstanding among his writings were *The Four Feathers*, 1902; *The Broken Road*, 1907; *At The Villa Rose*, 1910; *The Turnstile*, 1912; *The House of the Arrow*, 1924; *The Sapphire*, 1933; *Fire over England*, 1936; *Konigsmark*, 1938. Several of these were dramatised and filmed, and Mason also wrote original plays, including *The Witness for the Defence*, 1911; *Running Water*, 1922; and a film script, *The Drum*, 1937. In 1941 appeared an idealised life of Drake. Mason died Nov. 22, 1948.

**Mason, GEORGE HEMING** (1818-72). British painter. Born at Stoke-upon-Trent, March 11, 1818, he was articled to a surgeon in Birmingham. In 1845 he settled in Rome, where he painted portraits. Many of his pictures are of scenes in the Campagna, such as *Ploughing in the Campagna*, and *In the Salt Marshes*, 1856. In 1858 he returned to England. Of his English period, the chief pictures, which show great beauty of design and poetic sentiment, are *Wind on the Wold*, *The Cast Shoe* (both in the Tate Gallery), *The End of the Day*, and *The Harvest Moon*. He exhibited at the R.A., 1857-72, was elected A.R.A., 1869, and died Oct. 22, 1872.

**Mason, JAMES** (b. 1909). British film actor. Born at Huddersfield, May 15, 1909, he was educated at Marlborough and Peterhouse College, Cambridge. After practising as an architect in Manchester, he joined a repertory company, and in 1933 appeared in *Gallows Glorious* at the Shaftesbury Theatre, London. He entered films in *Late Extra*, 1935, but made no outstanding reputation until 1939 in *I Met a Murderer*. On the strength of saturnine performances in *Thunder Rock*, *The Man in Grey*, *Fanny by Gaslight*,

and *The Seventh Veil*, he was voted the most popular British film actor in the Daily Mail poll of 1945. *The Wicked Lady*, *Odd Man Out*, and *The Upturned Glass* confirmed his position in 1946-47. He married Pamela Kellino, 1940, and went to the U.S.A., 1946.

**Mason, SIR JOSIAH** (1795-1881). British manufacturer and philanthropist, born Feb. 23, 1795 at Kidderminster. In 1825, having gained some experience in a Birmingham factory, he bought a small business and became a manufacturer of hardware, soon devoting himself mainly to making pens, in which he built up a large business. The pens bore the name of James Perry, the London stationer who placed them on the market. Mason became interested



Sir J. Mason, British  
philanthropist

in other industries in Birmingham, especially electroplating. In 1872 he was knighted, and he died June 16, 1881. He founded Mason College, Birmingham, and an orphanage at Erdington. See *Birmingham University: consult* Life, J. T. Bunce, 1882.

**Mason and Dixon Line.** The boundary between the states of Pennsylvania and Maryland, U.S.A. Thus it was virtually part of the dividing line between the free and slave states before the Civil War. It was drawn 1763-67 by two English astronomers, Charles Mason and Jeremiah Dixon, to settle a dispute between the Lords Baltimore and the Penn family. The line was originally marked by stones, every fifth mile bearing on one side the arms of Lord Baltimore and on the other those of Penn. See *Dixie*.

**Mason City.** In Iowa, U.S.A., the co. seat of Cerro Gordo co. It stands on a small stream, 70 m. N.E. of Fort Dodge, and is a rly. junction. Settled in 1853, it was incorporated in 1870 and made a city in 1881. It produces 5 p.c. of the nation's cement, has brick and tile works, makes clay ware, and has meat processing plants, also a small trade in agricultural produce. Pop. 27,080.

**Masonry.** The art of shaping or building in stone and similar materials. It is an ancient craft and method of construction, stone being one of the first materials used for building purposes. It is not possible to give the date of the

first masonry structure, but it is quite easy to believe that prehistoric cave-dwellers adjusted the positions of loose blocks at the entrances to their homes to give added protection against the weather, their enemies, and the animals they had dispossessed.

Some of the finest examples of the masons' art in existence today are the work of the Greeks. The earlier works of the Egyptians were of a very high quality, too, but it is the magnitude of the tasks they undertook rather than the quality of their actual craftsmanship that is impressive. The building of the pyramids, which are constructed of large blocks of granite faced on the outside with slabs of polished alabaster, was a task which today would be considered to require the aid of modern transport, high grade steel cutting tools, and carborundum and diamond saws.

Masonry in the British Isles had not got far beyond the cave-dwelling stage before the coming of the Romans, and although these early invaders are chiefly famed for their road building, they were responsible also for many structures and founded a number of British towns. After their departure in A.D. 410, the buildings suffered during the troubled times that followed. The work of the Anglo-Saxon masons, though crude, showed the influence of the Romans, and in many cases materials from Roman buildings which had been destroyed or had gone into decay were used again.

The Normans brought with them in the 11th cent. new ideas from the Continent, their own craftsmen, and in some cases their own materials. Several English cathedrals contain Norman work constructed in stone from the quarries of Caen in Normandy.

From the 12th to the 15th cent. the development of masonry and of English architecture are synonymous and can be most easily traced through ecclesiastical buildings. Changing conditions in the mode of life are reflected in these old buildings; new ideas, new tools, and, with them, new methods of construction were handed on and determined a style of architecture. Historic events also influenced the work of the mason.

Norman masonry can be divided into two almost distinct periods. The earlier examples retain much of the crudeness of Saxon work, wide joints between blocks, shallow mouldings, typical



of the work of the axe and not the chisel. The use of the chisel brought about an almost sudden change in the quality of craftsmanship, and some examples, *e.g.* at Canterbury and Winchester, show a line of demarcation so clear that the period of the work can be traced almost to a stone.

The Early English period, approx. the 13th cent., shows a steady development of craft skill both in the finishing of the blocks themselves and in construction. Deeply cut mouldings, clustered columns surmounted by carved foliated capitals, thinner walls with larger and more scientifically de-

Masonry in the Perpendicular style is more subdued, considered to be a reflection on the Black Death which terminated the Decorated period. Mouldings were shallow, mullions were carried vertically through the tracery of the windows and the geometrical patterns became simple sub-division of the bars.

Many great masonry structures have been erected since the end of the Gothic period, *e.g.* works by Wren, Nash, Barry, and Pugin. Liverpool cathedral is an example of 20th cent. masonry; started in 1904, this great building was still far from complete when work on it was interrupted by the Second Great War.

Masonry tends to become a series of specialised trades, each with its own specialised crafts-

The design and required shape of the stone is transferred to zinc moulds from which the banker mason shapes the block with the aid of chisels and a mallet. Plain blocks and straight lengths of moulding can be worked entirely by machine. Each block is carefully checked for size and numbered before it is fixed, the term used for the actual setting of the stone in the wall.

T. B. Nichols

**Masons' Company.** London city livery company. Its first by-laws were drawn up in 1356, and its initial charter was granted in 1677. The site of the company's old hall in Basinghall Street was later covered by **Masons' Hall Tavern**. The offices are at 9, New **Masons' Company arms** Square, Lincoln's Inn, London, W.C. *Consult* Records of the Craft and Fellowship of Masonry, E. Conder, 1894.

**Masons' Marks.** Figures scratched or cut into the stones of ancient buildings in various parts of the world. Attention was first formally directed to them by George Godwin, in a communication to the Archaeological Association in 1841. Masons' marks assume innumerable forms, which may be roughly classed as geometrical, symbolical, heraldic, pictorial, and alphabetical. Some of these are of universal occurrence, *e.g.* the fylfot, or Thor's hammer, which is found in India and at Alnwick Castle, while a symbol in a chamber of the Great Pyramid is identical with one cut in a wall at S. Mary's, Leicester.

In attempting to account for the marks, opinion is sharply divided. Some see in them secret signs of mystic brotherhoods, or guilds of travelling masons, such as the Comacines, or masonic fraternity of Como; others take the view that they were tally marks to associate the mason with his work, and thus fix responsibility for quantity and quality. Masons'

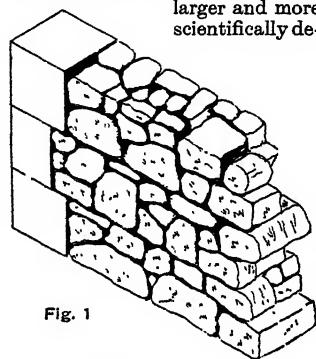


Fig. 1

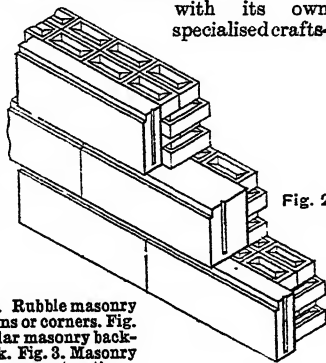


Fig. 2

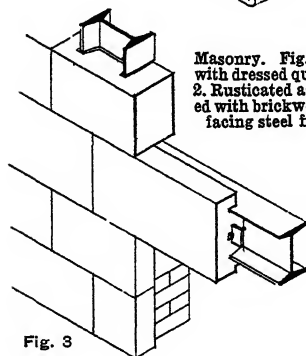


Fig. 3

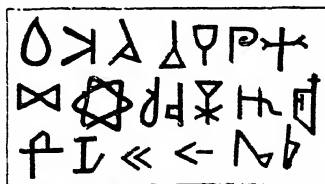
Masonry. Fig. 1. Rubble masonry with dressed quoins or corners. Fig. 2. Rusticated ashlar masonry backed with brickwork. Fig. 3. Masonry facing steel frame construction

signed buttresses are typical. Ribbed vaulting was introduced and developed, tracery in windows, which began as simple piercings, became ultimately separations of the mullions.

The growth of the Decorated style, which covers approx. the 14th cent., was gradual. This period includes the most perfect and complete examples of Gothic masonry. The mouldings consisted chiefly of rounds and hollows separated by fillets, many of the members being decorated by the familiar bell flower. Much of the tracery of the windows, an outstanding feature of the period, was geometrical in construction and varied considerably in design.

men. It can be divided according to the material—granite masonry, marble, hardstone, softstone, etc., and also according to the type of construction, *e.g.* rubble masonry, where the blocks are unwrought and are laid and bonded in the natural state just as they were obtained from the quarry; wrought or dressed masonry, where the blocks are accurately cut and dressed to a specific shape and size; monumental masonry, the working and erection of monuments.

The processes necessary to convert a piece of stone into a portion of a masonry structure vary according to the type of stone and structure. Generally the material is either wedged or blasted from its quarry bed and transported in blocks to the mason's yard. The rough blocks are cut to approx. sizes either by diamond-studded or carborundum-rimmed circular saws, or by the older method of abrasion with swinging steel blades fed with sand, steel shot, and water.



Masons' Marks. Examples from the cathedral of Pierrefonds, France, 14th century

marks, sometimes called bankers' marks, a mason who worked at a bench or bank being therefore a banker, are especially prevalent in medieval buildings, and it appears from the records of the Brechin Lodge of Masons that each member was assigned his own particular symbol, such symbols passing from father to son.

**Maspero**, GASTON CAMILLE CHARLES (1846-1916). A French Egyptologist. Born in Paris, June 23, 1846, he became professor of Egyptology there, 1873, and succeeded A. Mariette as director-general of excavations in Egypt, 1881-86, signalling this appointment by recovering the royal mummies at Deir el-Bahri, 1881. Returning to Paris, he was recalled to his former post in Egypt, 1899, and retired, 1914. His translated works include *Egyptian Archaeology*, 5th ed. 1902; *The Ancient Peoples of the Classic East*, 1894-1900, comprising *The Dawn of Civilization*, *The Struggle of the Nations*, and *The Passing of the Empires*; *Art in Egypt*, 1912; *Popular Stories of Ancient Egypt*, 1915. He died in Paris, June 30, 1916.

**Masque** (Fr., mask). Theatrical entertainment of an allegorical nature, usually written for a particular occasion, and distinguished chiefly by the splendour of the spectacular effects provided by machinist, scene painter, and costumer, to embellish the poetical conceits of the author. In the prologue to his own masque *The World Tost at Tennis*, Thomas Middleton defines the form, not calling the device a play, because it breaks the stage's laws of acts and scenes; it lays claim neither to comedy nor tragedy, nor yet to history, though presenting something of all; "it was intended for a royal night: there's one hour's words, the rest in songs and dances."

As a fashionable amusement in England the masque, introduced, it is said, from Italy in 1512, had its greatest vogue in the time of James I and Charles I. Ben Jonson was the author of many masques, pageants, and court entertainments, and reveals his poetic genius at its best in the delicacy of the craftsmanship and the light playfulness of the lyrics. The most beautiful example is *Milton's Comus*, presented at Ludlow Castle on Michaelmas night, 1634.

The Inns of Court provided many poets with opportunity to give their fancy rein in this direction, and lavished money upon the magnificent production of

masques. One by Chapman, for which Inigo Jones provided the machinery, cost the society of Lincoln's Inn £1,086 8s. 11d. to present before King James and his consort on the occasion of the marriage of the Princess Elizabeth to the Elector Palatine of the Rhine. For the same occasion Beaumont wrote a masque presented by the Inner Temple and Gray's Inn before the king and queen in the banqueting house, Whitehall. In the opinion of some judges the finest composition of the kind, with the exception of *Comus*, was *The Inner Temple Masque* of William Browne (1590-1645), author of *Britannia's Pastorals*. Others that may be mentioned are the *Microcosmus* of Thomas Nabbes, *The Triumph of Time*, a moral masque forming the last part of a curious composition called *Four Plays in One* by Beaumont and Fletcher, and *The Mountebank's Masque*, produced at court in 1618, included in John Marston's works by A. H. Bullen.

The composers of the 17th cent. contributed a good deal to this form of dramatic entertainment. Among them were Alfonso Ferrabosco, who wrote the music for Ben Jonson's *The Masque of Blackness*, *Hymenaei*, *The Masque of Beauty*, and *The Masque of Queens*. Thomas Campion wrote several masques, including *The Masque of Flowers*, for Gray's Inn; and sundry songs in other masques. The song *Rule Britannia* appeared in its original form in the masque of Alfred, 1740, by Thomson and Mallet, with music by T. A. Arne. Consult *English Masques*, ed. H. A. Evans, 1897; *List of Masques, Pageants, etc.*, W. W. Greg, 1902.

**Masquerade**. Form of revel in which the company wear masks. In the 13th century the masquerade was a highly popular amusement in England, not only among the lower classes, for whom the mummers provided crude fun at seasons of mirth and jollity, but also among the feudal lords and at the court. Edward III was particularly fond of this sort of entertainment, and an extant list of the masks and "visers" used at his Christmas revels in 1347, the year before the Black Death, mentions lions' and elephants' heads, men's heads with bats' wings, satyrs, and virgins. Both Pepys and Evelyn mention a masquerade held at Whitehall, Feb. 2, 1665, and at the beginning of the 18th century this form of

revel became such a craze in London that it was denounced by moralists and satirists, and by the clergy from the pulpits. They survive in the festivities of carnival (*q.v.*), and, in a less riotous form, in the fancy dress ball.

**Mass**. Property of matter. Two bodies are said to possess the same mass if they are equally accelerated when subjected to the same force. Until the latter part of the 19th century the truth of the laws of conservation of mass and of energy was undisputed. It was shown by experiment, for instance, that the masses of reacting substances in a chemical reaction were just equal to those of all the products formed, and that any heat, *i.e.* energy, development was a constant and independent of the manner in which the change took place. These laws of mass and energy remained unquestioned until the discovery of radio-activity and Einstein's special theory of relativity. This theory indicated that an increase in the energy of a physical system is associated with an increase of its mass, and a system of mass  $m$  is supposed to contain energy  $E = mc^2$ , where  $c$  is the velocity of light. Einstein (and Lorentz before him but by classical dynamics) deduced the

relation  $m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$  for the

mass of an electron moving with velocity  $v$  where  $m_0$  is to be regarded as its rest mass. The kinetic energy of this electron will therefore be given by

$m_0 c^2 \left( \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} - 1 \right)$  approaching

the Newtonian classical value of  $\frac{1}{2} m_0 v^2$  at low velocities. Mass and energy thus appear to be interconvertible and the law of conservation of mass for an individual body gives way to that of conservation of energy. The increase in mass is only about  $1$  in  $3 \times 10^{12}$  even at the high speed of a jet plane, but viewed from the other angle, *i.e.* conversion of mass into energy, large amounts of energy might be readily available. The conversion into energy of 1 milligram would release over 20,000 kWh of energy. For the mass of such a system to alter, the energy developed must be removed from the system.

**Mass** (Lat. *missa*, dismissed). Roman Catholic name for the Eucharist. The origin of the word

is much disputed, but Mass appears to have been used in its present sense from the 6th century, the "dismissal" being first that of the catechumens after the sermon, and then that of the baptized at the close of the service. The word was sometimes used for services other than that of the Eucharist. The term was retained in the first vernacular liturgy of the Church of England, 1549, where the title ran, The Supper of the Lord, and the Holy Communion, commonly called the Mass, but was omitted in the revised book of 1552.

The Roman Catholic Mass is based on the belief that Christ died once for all as a victim for man's sins and can die no more, though He stands for ever before the throne of heaven as "a lamb as it had been slain" (Rev. 5, v. 6). In the Mass by Transubstantiation (*q.v.*) the heavenly victim is believed to be present on the altar and is offered, by the ministry of the priest, as a sacrifice of adoration, praise, thanksgiving, and propitiation. The efficacy of the Mass derives from Christ's one sacrifice and adds nothing to its fruits, though it can distribute them. The Church benefits in the fruits of every Mass, but a special share goes to those present, to those whose intention the priest celebrates, and to the priest himself. High Mass (*Missa solemnis*) is celebrated with the assistance of deacon and subdeacon, and is sung. Low Mass (*Missa bassa* or *lecta*) is recited by the priest without music and with one server. The Mass for the dead is called a Requiem, from the opening word of the Introit.

See Communion, Holy; Eucharist; Last Supper; Requiem; Vestments.

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**MASS, MUSIC OF THE.** From earliest centuries in the history of the Christian Church some form of singing has been employed varying from monotone with slight inflections, through inflected monotone of a more elaborate type, to the polyphonic music of the 15th and later centuries. The portions of the Mass chiefly chosen for

musical treatment were the Kyrie, Gloria, Credo, Sanctus, Benedictus, and Agnus Dei.

In these polyphonic settings a plainsong melody was chosen and other voice parts were woven around it, in number from 2 to 12, and even more; sometimes the melody was a secular one, and this led to levity when irreverent chorismen substituted the original words of a love song or drinking song for the Latin words of the Mass. Occasionally a composer provided his own *canto fermo*, and treated it in the same way by the addition of cleverly interwoven vocal parts. Composers of the polyphonic Mass, whose names may be used as links for further reference, include Dufay, Dunstable, Binchois, Morales, Van Rore, Goudimel, Willaert, Palestrina, Vittoria, Gabrieli, Orlando Lassus, William Byrd, and Gregorio Allegri, with whom the polyphonic school practically died out in the middle of the 17th century.

In the 18th and early 19th centuries we have as musical landmarks the Masses of Bach, and the beautiful but not strictly ecclesiastical compositions of the Italian and Viennese schools, including Haydn, Mozart, and Schubert. Beethoven's Mass in D, 1823, may be reckoned the culmination of this type. During the later part of the 19th century and continuing into the 20th, there was a steady revival of interest in polyphonic music, and reprints of the finest examples have been made, helping to redeem the cult of this music from the antiquarian atmosphere which had hitherto surrounded it.

**Massa.** City of Italy, joint capital with Carrara of the prov. of Massa e Carrara. It stands near the Gulf of Genoa, 20 m. by rly. S.E. of Spezia, with a light rly. to its port, Marina di Massa, or San Giuseppe, whence is shipped the famous white marble. The fine ducal palace, built in 1701, and now the prefecture, was a residence of Napoleon's sister, the duchess of Lucca. Manufactures include tobacco, oil, paper, silk and cotton. Pop. est. 39,000.

**Massachusetts.** State of the U.S.A. In New England, it is one of the 13 original states of the Union. Its area is 8,266 sq. m., in which is included the islands of Nantucket and Martha's Vineyard. It has an irregular coastline, which, broken by Cape Cod, Massachusetts, and Buzzard's Bays, and lesser openings, including Plymouth Bay, is 300 m. long. The Cape Cod peninsula is a curiously

shaped extension. The surface rises from the low coastal plain to heights of over 3,500 ft. The chief rivers are the Merrimack, Connecticut, Housatonic, Hoosac, Concord, and Charles, and the state has a number of lakes, its water area being 220 sq. m. The soil is in parts unfertile; hay, potatoes, and maize are the chief crops. Tobacco is grown, and much land is under fruit. Fishing is an important industry. Boston is the capital. Other large towns are Worcester, Fall River, Lowell, Cambridge, New Bedford, Lynn, Springfield, Lawrence, and Somerville. Gloucester is a fishing centre. Harvard is in the state, as are many places associated with New England's early days. It sends two senators and 16 representatives to Congress. Its local affairs are managed by a general court of two houses.

The Commonwealth of Massachusetts, as it is still called, owes its origin to the Pilgrim Fathers who landed near Cape Cod in 1620. In 1629 they secured possession of the land around their first home from the king of England, and, known as Plymouth colony, other settlements were made in it. About this time, another band of settlers, led by John Endicott, having obtained a grant of land, arrived and formed a settlement N. of Plymouth, the two being quite independent. This was known as the governor and company of the Massachusetts Bay, and had a constitution defined by charter. Both colonies were strengthened by the arrival of Puritans from England during the reign of Charles I.

The Massachusetts Bay colony was the parent of Rhode Island and Connecticut, which broke from it owing to differences of opinion about ecclesiastical matters. Compensation was found, however, by taking possession of New Hampshire and Maine. In the time of Charles II there was trouble between the colonists and the crown, and in 1684 the charter was taken away. A new charter was given in 1692, the two colonies, Massachusetts and Plymouth, being united, and Maine being also included in the enlarged colony. The richest and most populous of the New England colonies, Massachusetts took a leading part in the wars of the 18th century against France, as her citizens did in the struggle for independence, although even here there were many loyalists. Its present boundary dates from 1820, when Maine be-

came a separate state. New Hampshire having been cut away before the declaration of independence.

In the modern state the struggle for political power lies between voters of Anglo-Saxon origin, usually Republicans, and descendants of Irish immigrants, usually Democrats. There was a large Irish influx in the 19th cent., and in 1948 Boston voters were 75 per cent. R.C. Puritan tradition is still strong, however, in small towns and rural areas. The Congregational church was not disestablished until 1830. Administration is decentralised to an unusual extent: there are 40 separate municipalities within 15 m. of Boston. Harvard university has made proposals to correct this decentralisation. Pop. 4,316,721.

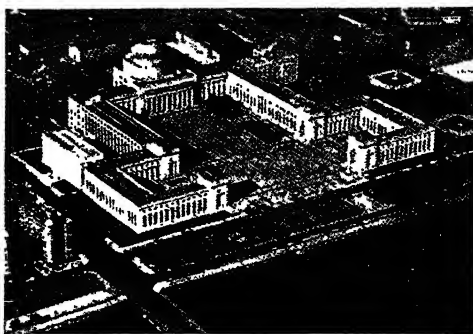
**Massachusetts Bay.** Broad inlet of Massachusetts, U.S.A. On the E. coast and roughly triangular in shape, its shores are marked by many small openings and fringed by several islands. It extends inland for some 50 m.

**Massachusetts Bay Colony.** One of the earliest English settlements in N. America. In 1623 a company of merchants from Dorchester obtained from the council of New England a patent for a strip of land along the coast from 3 m. S. of the Charles River to 3 m. N. of the Merrimac, and extending from the Atlantic westward "to the South Sea." In 1629 a royal charter was granted incorporating the governor and company of Massachusetts Bay. By this charter a group of traders was turned into a political organization. The administration was entrusted to a governor, deputy governor, and 18 assistants, all elected by the whole body of freemen, who, together with these officers, were to meet four times a year in a general court.

Dissatisfaction with the repressive religious policy of the English government was not the least powerful motive of the successive migrations which established the settlement, notably those led by John Endicott and John Winthrop. In 1631 the general court enacted that none but a member of the Church should have the

right of voting, thus realizing the theocratic ideal. The founders of this colony were puritans of the Church of England, unlike those of the Plymouth colony, founded nine years earlier, who were independent separatists. Later, Congregationalism became the religion of the colony. The original charter was forfeited in 1684, but a second was granted in 1691.

**Massachusetts Institute of Technology.** American institution for technical education. Situated in Cambridge, Mass., it was founded in 1861, and has more



Massachusetts Institute of Technology. The buildings in Cambridge, Mass., to which the institute was moved from Boston in 1915

than 300 professors and instructors, and an average student body of about 3,000. The library contains over 250,000 volumes. The institute moved from Boston to its present 80-acre site in 1915.

**Massacre of the Innocents.** Name given to the killing, by order of King Herod, of all children of the age of two and under in Bethlehem and the surrounding country. Herod hoped by this measure to ensure the death of the child born to be king of the Jews, of whom he had been told by the wise men from the east. Warned by an angel in a dream, Joseph saved the life of Jesus by taking Him and His Mother into Egypt (Matthew 2, vv. 16-18). See Innocents' Day.

**Massa e Carrara.** Province of N.W. Italy, in Tuscany. It has a short coastline on the gulf of Genoa, and a ridge of the Apennines in the N.E. Mostly hilly, its chief product is its famous marble. Area 688 sq. m.

**Massage.** For details of this method of dealing with various bodily conditions, see Physiotherapy.

**Massa Marittima.** City of Italy, in the prov. of Grosseto. It stands on a hill at an alt. of 1,445 ft., 16 m. by rly. N.E. of Follonica.

It has a 13th century cathedral, a museum of antiquities, and a library. In the vicinity there are mines of iron, lead, copper, zinc, and lignite, and mineral springs. The town suffered only slight damage in the Second Great War, although the Germans in the neighbourhood put up a strong resistance to the advance of the Allied 5th army. There was a night tank battle near by, June 24-25.

**Massawa, MASSOWAH, OR MASSAUA.** Town on a small coral island in the Red Sea. It is off the coast of the former Italian colony of Eritrea, of which it forms the chief port, and is joined to the coast by a causeway nearly a mile long. Massawa was occupied by Italy in 1885. It is the centre of a pearl-fishing industry and of a trade in palm-nuts. The rly. to Asmara (q.v.) links it with Abyssinia. Massawa is one of the hottest inhabited places in the world, mean temperature in May reaching nearly 100° F.

In the East Africa campaign, 1940-41, Massawa was captured by British Imperial forces on April 8, 1941, the Italians thereby losing their last port on the Red Sea. Pop. 17,169.

**Massawippi.** Lake and river of Quebec, Canada. The lake is situated 75 m. E.S.E. of Montreal, measures 9 m. by 3 m., and is a tourist resort. The river joins the lake with the St. Francis river at Lennoxville.

**Masséna, ANDRÉ (1758-1817).** A French soldier. Born at Nice, May 6, 1758, he served first in the Sardinian army. Joining the forces of the French Republic, he gained rapid promotion and became a general in Dec., 1793. He made a reputation in Italy, especially at Rivoli,



(Masséna)

Jan. 14, 1797, by his defeat of Korsakow at Zürich, Sept. 26, 1799, and by his defence of Genoa in 1800. Appointed a marshal in 1804, he rendered brilliant services in the Wagram campaign of 1809, and was created duke of Rivoli and prince of Essling by Napoleon.

In 1810 he was given the command against Wellington in the Peninsular War. The British general, after checking him at Busaco, Sept. 27, fell back upon Torres Vedras, and all Masséna's efforts to pierce the entrenchments

were in vain. After five months he began, in March, 1811, a skilfully conducted retirement, but on May 5 he was defeated by Wellington at Fuentes d'Onoro, and with this his military career practically terminated, since Napoleon, attributing his failure to mismanagement, superseded him. On Napoleon's abdication, April, 1814, Masséna gave his adherence to the restored Bourbon dynasty and refused to join Napoleon on his reappearance in 1815. He died April 4, 1817. *Consult* *Histoire Militaire de Masséna*, E. Gachot, 4 vols., 1901-13.

**Massenet, JULES ÉMILE FRÉDÉRIC** (1842-1912). French composer. Born May 12, 1842, he

studied at the Paris Conservatoire, where he had a distinguished career and became professor of composition, his talents winning for him also membership of the



J. E. F. Massenet,  
French composer

Academy and the Legion of Honour. His first opera was produced in 1867, and for the next forty years he turned out a succession of operas, oratorios, overtures, orchestral suites, etc. The most successful of his operas are *Le Cid*, *Manon*, *Thaïs*, and *Le Roi de Lahore*. He died Aug. 14, 1912.

**Massey, GERALD** (1828-1907). British poet and mystic. Born near Tring, Hertfordshire, May 28, 1828,

the son of a bargee, he began work in a mill at the age of eight, and at 15 was working in London as an errand boy. Devoting his leisure to study, at 21 he was editing a



Gerald Massey,  
British poet  
*Elliott & Fry*

Chartist journal, and fell under the influence of F. D. Maurice. Among his best efforts are *The Ballad of Babe Christabel*, *Sir Richard Grenville's Last Fight*, and *Ten Kings*. In the latter part of his life Massey's interest was chiefly absorbed by spiritualism and Egyptology; he wrote *Concerning Spiritualism*, 1871, and similar books, and lectured in America on mysticism. His *Ancient Egypt*, *The Light of the World*, 1907, is his most notable work as an

Egyptologist. He also published a fantastic interpretation of Shakespeare's sonnets, under the title *The Secret Drama of Shakespeare's Sonnets*, 1888. Died Oct. 29, 1907.

**Massey, RAYMOND** (b. 1896). Canadian-born U.S. actor and producer. Born at Toronto, Aug. 30,



Raymond Massey,  
Canadian-born actor

1896, he was educated at the university there, and at Balliol College, Oxford. After serving in the First Great War, he made his début on the London stage at the Everyman Theatre, 1922, and later produced and acted in many well-known plays, e.g. *The White Château*, 1927; *The Man in Possession*, 1930; *The Rats of Norway*, 1933; *The Shining Hour*, 1934; *Idiot's Delight*, 1938. He made his first appearance on the New York stage in 1931, when he appeared as Hamlet, and his later Broadway successes included *Abe Lincoln in Illinois*, 1938; *Lovers and Friends*, 1943. He became a U.S. citizen in 1944.

**Massey, VINCENT** (b. 1887). A Canadian administrator. Elder brother of Raymond Massey, he

was born at Toronto, Feb. 20, 1887, and educated at St. Andrew's School, and the university there. After graduating at Balliol College, Oxford, he became lecturer in



Vincent Massey,  
Canadian administrator

modern history at Toronto university (of which he later became governor and, in 1947, chancellor). After serving as president of the Massey-Harris co., 1921-25, he entered politics, and was minister without portfolio in the Dominion cabinet, 1925, attending the Imperial conference in London the following year. Canadian minister to the U.S.A., 1926-30, he was high commissioner for Canada in Great Britain from 1935 to 1946. Some of his wartime speeches were published as *The Sword of Lionheart* in 1943.

**Massey, WILLIAM FERGUSON** (1856-1925). New Zealand statesman. Born at Limavady, co. Derry, Ireland, March 26, 1856, and educated at Londonderry, he

went in 1870 to New Zealand, where he took up farming. He was elected to parliament in 1894.

becoming chief of opposition whip the following year, and leader of the opposition in 1903. In 1912 he became prime minister and minister of lands and labour. He was a member of the Imperial war cabinet, 1917-18, represented New Zealand at the peace conference in Paris, 1919, and attended the Imperial conference held in London, 1922. He died May 10, 1925.

**Massicot.** A form of the monoxide of lead (PbO). It occurs in nature as the mineral sometimes called lead ochre, which is brownish yellow in colour. It is now prepared by oxidising lead as the first stage in the production of red lead. The lead is melted in a reverberatory furnace, the temperature being kept above the melting point of lead and below that of the oxide which is continuously removed as it forms on the surface. So produced the massicot is a bright yellow pigment of coarse texture. If the temperature is allowed to rise above the melting point of the oxide the form known as litharge is produced. Massicot can also be produced by the careful oxidation of white lead. On further heating and oxidation the monoxide (litharge or massicot) is converted to red lead (Pb<sub>3</sub>O<sub>4</sub>). *See* *Lead*; *Pigments*.

**Massillon, JEAN BAPTISTE** (1663-1742). French prelate. Born at Hyères, June 24, 1663, the son

of a notary, he became an Oratorian in 1681. He was bishop of Clermont from 1717 until his death, Sept. 18, 1742, when d'Alembert pronounced his eulogy in the French academy, to which he was elected in 1719. He was regarded as the greatest preacher of France, whose pulpit oratory was distinguished by its purity and elegance of style.

Unpopular at court, he pronounced the funeral oration over Louis XIV, and preached 10 Lenten



W. F. Massey,  
New Zealand statesman  
*Elliott & Fry*



J. B. Massillon,  
French prelate

sermons (Le Petit Carême) before Louis XV in 1718, urging upon him the need of morality and just government. His one sermon before Louis XIV drew from the last named the famous epigram to the effect that while other preachers made him contented with them, Massillon made him discontented with himself.

**Massine, LEONIDE** (b. 1896). Russian dancer and choreographer. Born at Moscow, Aug. 9, 1896, he was educated at the imperial ballet school there, and succeeded Fokine and Nijinsky as leading male dancer and choreographer of the Diaghilev company. His finest part



Leonide Massine,  
Russian dancer

was generally considered to be the Miller in *The Three-Cornered Hat*. He introduced an angular and "earthy" element into the curves and elevation of classical ballet. In 1932 he joined the de Basil company, and his productions included *Jeux d'Enfants*, *Le Beau Danube*, *Union Pacific*, *Scuola di Ballo*, *Le Bal*, *Gaieté Parisienne*. One of the most famous dancers of his age, he created ballets based on famous classical symphonies. He danced at the Metropolitan, New York, 1940-43, and reappeared at Covent Garden in 1947, when his *Mamzelle Angot* was produced. See *Ballet*.

**Massinger, PHILIP** (1583-1640). English dramatist. Born at Salisbury in Nov., 1583, and educated at St. Alban Hall, Oxford, he lived by his pen in London from 1606 till his death, March, 1640. He was buried in S. Saviour's, Southwark.



A voluminous writer, he is now known to have been part author of plays usually attributed to Beaumont and Fletcher. Fifteen of the plays which he wrote independently are extant. A master of plot and also of construction, his plays held the stage till the final quarter of the 19th century. Of his works, *The Bondman*, *The Maid of Honour*, *The Emperor of the East*, and *Believe As You List* (the last not printed till 1848) are still sometimes read. His masterpiece is *A New Way to Pay Old Debts*.

**Massingham, HAROLD JOHN** (b. 1888). British writer. Son of H. W. Massingham (v.i.), he was born March 25, 1888, and educated at Westminster and Queen's College, Oxford. A weekly contributor to *The Nation* and *Athenaeum*, 1916-24, and to *The Field* from 1938, he became noted for books on the English countryside, e.g. *In Praise of England*, 1924; *English Downland*, 1936; *Cotswold Country*, 1937; *A Countryman's Journal*, 1939; *Chiltern Country*, 1940; *The Wisdom of the Fields*, 1945; *Where Man Belongs*, 1946. He revered rustic crafts, Shakespeare, and naturalists, and hated new builders, whether in the reign of Henry VIII or in his own days.

**Massingham, HENRY WILLIAM** (1860-1924). British journalist. Born at Old Catton, Norwich, and educated at Norwich grammar school, he entered journalism on the *Norfolk News*. In London he was successively editor of the *National Press Agency*, the *Star* (where he succeeded T. P. O'Connor), and the *Daily Chronicle*. Later he was for two years London editor of the *Manchester Guardian*, special parliamentary representative of the *Daily News* (1901-07) and then editor of the *Nation* until 1923. He died Aug. 27, 1924. A keen and incisive writer, of advanced radical views, he was also well-known for his wide acquaintance with French politics and literature.

**Mass Number.** Term used in physics. It is in the main used in connexion with atoms which exist in isotopic forms. Isotopic masses are essentially nuclear masses since practically the whole of the atomic mass is concentrated in the nucleus. From inspection of atomic weights and nuclear charges it appears that all nuclei except hydrogen must contain both protons and neutrons, the neutron being uncharged but possessing almost the same mass as the proton. If a proton be added to a given nucleus then the electric charge is thereby increased, producing a rise in atomic number and the creation of an atom in the next place in the periodic table. If a neutron is added to a nucleus the atomic number is unaffected, but an isotope is created since an increase of mass occurs.

Prout originally stated over 100 years ago that all the heavier atoms were built up of hydrogen, i.e. of protons and electrons; in the light of modern experience, however, his rule may be restated

as the whole-number rule: the masses of all atoms are nearly whole numbers with respect to 16 for the neutral oxygen atom. Hydrogen, however, does not fit into the scheme and actually Aston's more precise measurements made with the mass spectrograph (*q.v.*) showed slight deviations in nearly every case. The difficulty was surmounted by assuming that a part at least of the masses of the electron and proton were electromagnetic, so that the mass of a highly condensed structure was smaller than the sum of the component units, i.e. than of these if widely dispersed. Hence in the formation of a heavy nucleus energy must be released before a stable packing state is attained. The deviation of the mass of a nucleus from the whole number is termed the mass defect ( $\delta$ ). If  $N$  be the mass number of an isotope its mass in general will be  $N-\delta$  and the ratio  $\delta/N$  is a measure of the amount of packing of its constituent particles, i.e. of the stability of its nucleus.

**Masson, ANTOINE** (1636-1700). French engraver. Born at Louvry, near Orléans, he at first engraved ornaments on steel. Settling in Paris, he devoted himself to painting portraits, but became famous for his line engravings. In 1679 he was elected to the Academy in Paris, where he died, 1700.

**Masson, DAVID** (1822-1907). Scottish essayist and biographer. Born at Aberdeen, Dec. 2, 1822,

and educated at Marischal College and Edinburgh university, he was professor of English literature, University College, London, 1852-65, and held the chair of rhetoric and English literature at Edinburgh university, 1865-95. He became editor of the privy council register of Scotland in 1878, and historiographer royal for Scotland in 1893. He died at Edinburgh, Oct. 6, 1907.

His numerous works include a monumental *Life of John Milton*, 6 vols., 1859-80; *British Novelists and Their Styles*, 1859; *Life of Drummond of Hawthornden*, 1873; *Life of De Quincey*, 1878; and *Edinburgh Sketches and Memories*, 1892. He was the first editor of *Macmillan's Magazine*, 1859-67, and a man of solid learning, keen intellect, and abounding energy.



David Masson  
Elliott & Fry



Married in 1853 to Emily Rosaline Orme, he left three daughters and one son, Sir David Orme Masson (1858-1937), for 37 years professor of chemistry at Melbourne.

**Masson, Frédéric** (1847-1923). French historian. He was born at Asnières, and early devoted himself to a close study of Napoleon and his family. The result was a series of valuable volumes, which included *Napoléon et les Femmes*, 1893, Eng. trans. *Napoleon and the Fair Sex*, 1894; *Napoléon Inconnu*, 1895; *Joséphine, Impératrice et Reine*, 1898; *Napoléon et sa Famille*, 9 vols., 1897-1913; *Napoléon et son Fils*, 1904. He was elected a member of the Academy in 1903, and died Feb. 19, 1923.

**Massorah.** Rabbinical term for tradition. It has special reference to the text of the Hebrew Bible, and the efforts made to preserve it uncorrupted. Rules to this end were handed down orally from one generation to another, until the text was finally settled. There are two forms, the eastern and western, or Babylonian and Palestinian, which differ in vowels, accents, and system of punctuation. Those who have made the subject one of special study are called Massoretes. The standard Massorah text is that of Ginsburg. See *Mishna*; *Talmud*; consult also *The Massorah ha-Massoreth* of Elias Levita, 1867, 1880-1905; *The Massorah* compiled from MSS., 4 vols., C. D. Ginsburg, 1906.

**Mass Observation.** British organization for sociological research. Founded in 1937 by Tom Harrison and Charles Madge, it studies the habits, attitudes, and opinions of the British people, and disseminates the ascertained facts. It employs full-time field-workers assisted by a nation-wide panel of voluntary observers. Stressing the specialised questionnaire, it carries out surveys of public opinion on behalf of government departments, commercial organizations, religious and political groups, etc. *Mass Observation* reports published in book form include *Britain, 1939*; *War Begins at Home*, 1940; *Clothes Rationing*, 1941; *People in Production*, 1942; *Britain and Her Birth Rate*, 1945; *Peace and Public*, 1947; *Puzzled People*, 1947. The head office is at 7, Kensington Church Court, London, W.8.

**Mass Production.** Term implying the manufacture in bulk of any article. The principle is to split manufacture into a multitude of simple operations which can easily be taught to the workers. Each

worker has to carry out one comparatively simple operation, the article gradually being assembled or completed as it passes from one operative to another on a conveyor. Little is left to the initiative of the employee, and tools and machinery play an increasingly large part. The great disadvantage is the deadly monotony of work, though in well managed factories this may be mitigated by frequent changes of task.

The motor industry is usually given the credit of developing mass production beyond the experimental stage, and the Ford Company of America is regarded as having carried out the biggest development of the method under a single management and for a single purpose. Ford was able by mass production not only to pay his ordinary workers the highest wages, but also to sell his product at the lowest price and still make an enormous profit. By 1926 2,000,000 Ford cars a year were made and placed on the market. In Europe one who nearly approached the American ideal was Thomas Bata, shoe manufacturer, of Zlín, Czecho-Slovakia. Like Ford, he paid good wages; sold his shoes for the lowest price in the world; tried to limit his production to a small number of models; and introduced a profit-sharing scheme for his employees.

Mass production methods have been introduced into nearly every industry in which machinery can replace human labour, e.g. clothing, prefabricated houses, bicycles, wireless sets, and certain branches of food production. During the Second Great War the method was adopted in all highly industrialised countries for munitions, aircraft, and shipping. To overcome the serious shortage of shipping amongst the Allies, Henry J. Kaiser (*q.v.*) revolutionised shipbuilding by making sections of vessels in factories and assembling them at his shipyards. He next turned his attention to aircraft, and by 1944 one of his factories could turn out 150 fighters a month. See *Bedaux*, C. E.

**Mass Spectrograph.** Instrument used in physics. It was a development of the discovery of "positive rays" (originally termed "canal rays") by Goldstein in 1886. These rays consist of atoms or groups of atoms, which, by collision, have lost one or more electrons in the intense electric field between the electrodes of a low pressure discharge tube. They may be detected as an emerging

beam in the space behind the cathode if the latter is suitably perforated. J. J. Thomson made the first determination of the ratio of the charge  $E$  to the mass  $M$  of these positive particles by applying parallel electric and magnetic fields to the beam and observing the resultant deflections. Considerable attention has to be paid to the maintenance of a low gas pressure in the observation vessel. If  $x$  and  $y$  be the electrostatic and magnetic deflections respectively it follows that  $y^2/x = k.E/M$ , in which  $k$  is a constant depending upon the values of the electric and magnetic fields.

By means of this positive-ray analysis Thomson showed that the gas neon consisted of two isotopes, which was later more accurately confirmed by Aston's apparatus which he called the mass spectrograph. This overcame the loss of intensity of the positive-ray beam, by bringing to the same focus all positive ions with the same  $E/M$  of any velocity.

With later instruments Aston obtained an accuracy of 1 in 10,000 and was able to show that most of the elements were complex, having in some cases as many as ten isotopes. He was also able to obtain fairly accurate measurements of the relative proportions of the various isotopes. These measurements are now usually made by a simpler type of instrument than that of Aston, e.g. the mass spectrometers of Dempster, Bainbridge, etc., which sort out all ions having a particular velocity, and pass them through a uniform magnetic field.

**Massys, Quinten.** A Flemish painter, otherwise known as Matsys and so described in this *Encyclopedia*.

**Mast.** In sailing vessels, the spar, set upright from the keel-plate, on which sail is set. Built-up masts comprise two or more sections, the upper of which may be lowered when reducing the amount of sail. From the deck upwards the sections are termed the lowermast, topmast, topgallant mast, and royal mast. Pole masts are usually constructed in a single piece. Metal masts, often used on racing yachts, are frequently hollow, internal bracing being provided to give the necessary strength. Where a ship has more than one mast a distinctive name is given to each, e.g. foremast, mainmast, and mizzen or mizzenmast. The word is also used for any more or less vertical pole or narrow built-up structure

for supporting, e.g. the antenna of a wireless telegraphy station, or the overhead trolley of an electrically propelled vehicle. There are also mooring-masts for airships. See Ship.

**Mastaba** (Arab., bench). Early form of Egyptian tomb. The term was adopted by Mariette. Rectangular and flat-roofed, with sloping sides, it was faced at first with sun-dried brick, and afterwards with limestone. Representing the earliest elaboration under the Old Kingdom of the pre-dynastic pit-tomb, mastabas are best preserved at Dahshur and Sakkara, whose "step-pyramid" is transitional to the fully developed pyramid. At Gizeh they were arranged in regular streets about the great pyramids. There was a "false door" (stela) on the river face for the use of the departed; a chamber of offerings, often sculptured; a secret niche (serdab) for the sculptured "double"; and an aperture through which it received the offerings and incense. The tomb-chamber was beneath. See Dolmen; Sakkara.

**Master** (Lat. *magister*, master). Term for a man exercising control, authority, or headship, especially one empowered to direct or teach. The word has many applications. Formerly used in England as a title for the male head of a household, or for any man, it is now replaced in this sense by the modified form Mr., *pron.* mister. The eldest son of a Scottish viscount or baron is known as master, e.g. the master of Stair. In popular usage a boy may be addressed or written to as Master Harry Smith.

The British royal household has its master of the household, of the horse, of ceremonies, and of the king's musick. The master of the revels was originally supervisor of royal entertainments, and gradually developed into a stage censor. The heads of most colleges in Cambridge, and of some in Oxford, are called master. The chief official of a hunt is called the master. The incumbent of the Temple Church in London is called the Master of the Temple, a title originally borne by the grand master of the Knights Templars. In freemasonry a master mason is any mason who has passed the third degree, and is not to be confused with the master of a lodge.

The commander of a merchant ship is the master, originally master-mariner or sailing-master, by courtesy called captain. The term old masters is applied to

the great painters from the 13th to the 17th centuries approximately, and also to their works. Master is the title of a university degree in the faculty of arts, originally conferring a licence to teach in the university. In some British universities it is used for the degrees in science and surgery. (See Degree.) As a title of respect it is sometimes used by those in artistic professions in addressing an acknowledged superior (cf. Ital. *Maestro*).

**MASTER AND SERVANT.** This legal relation is created where one person hires the services of another, either generally or for a fixed period, in such a way that the servant is bound to obey all reasonable commands of the master; and, moreover, can be told not only what work to do, but how to do it. He is to be distinguished from a sub-contractor, who agrees to do certain work at a price, but does it, within limits, in his own way, and may himself hire servants to help him. He is also to be distinguished from an agent who acts for the principal within the limits of his authority, and for strictly defined purposes.

Such questions as wages and notice depend primarily on agreement. In the absence of any agreement a servant's engagement is for a year, and from year to year, but subject to being determined by notice which is fixed by general or local custom. As a rule, the more important the situation the longer is the notice required. By long custom a menial (i.e. an indoor) servant gives or takes a month's notice. In other cases, apart from special custom, it is for a jury to say what is a reasonable notice. Workmen, i.e. trade servants, are usually entitled to a week. A master or mistress is under no compulsion, as in Germany, to give a servant a character; but, if one is given, it must not be a false one, or the giver of it is guilty of a crime.

If a character is given to a prospective employer who applies for it, it is privileged, however derogatory to the servant, unless express malice can be proved. Misconduct, or disobedience to reasonable orders, or insubordination, are grounds for dismissal without notice. A hiring or contract of service for more than a year should be in writing, and signed.

**Master.** Title of various legal officials in England. The master of the faculties is superintendent of the court of faculties, a tribunal belonging to the archbishop, which

does not hear pleas but grants licences or dispensations, such as licence to marry, erects monuments in a churchyard, or removes bodies after burial. Masters in lunacy are officials appointed by the lord chancellor as guardians of lunatics to hold commissions of lunacy, superintend the management of the estates of lunatics, and generally to act as directed by the rules in lunacy, or by the judge in lunacy acting thereunder.

Masters of the supreme court are officials with duties partly judicial, partly administrative. Under the Judicature Act of 1879 they replaced, in the king's bench division, the earlier sixteen masters of the common law courts, the king's coroner and attorney, the master of the crown office, the two record and writ clerks, and the three associates. There are also masters in the chancery division, that title having been substituted in 1897 for the former title of chief clerk. The masters of the supreme court hear summonses in chambers, hold inquiries as to damages, tax costs, and generally do much work requiring experience, knowledge of law, and a judicial mind. In almost every case there is a right of appeal to the judge from a master's decision. Under the Coinage Act, 1870, the chancellor of the exchequer for the time being is *ex officio* master of the mint.

**Master-at-Arms.** In the Royal Navy, the head of the police aboard a warship.

**Master Builder, THE.** English title of Bygmester Solnaes, a play in three acts by Henrik Ibsen (q.v.). One of Ibsen's most powerful studies of contemporary social life and morality, it was produced in 1892. Trans. into Eng. by William Archer and Edmund Gosse, it was produced at the Trafalgar Square Theatre, London, Feb. 20, 1893, with Elizabeth Robins and Herbert Waring in the chief parts. It has often been revived, e.g. by Donald Wolfit at the Westminster Theatre, 1943.

**Master Cutler.** Dignitary of the city of Sheffield, England. Ranking next to the lord mayor as the most important civic figure, he presides over the ancient Cutlers' Company. The company exercises jurisdiction over the metal industries in the W. Riding of Yorkshire.

**Master Gunner.** Honorary rank borne by an officer of the Royal Artillery and awarded by the king. See Gunner.

**Master Humphrey's Clock.** Title of a weekly magazine, in which Charles Dickens proposed to

publish short miscellaneous papers and occasional continued stories, introduced and connected by the machinery of a club, all material to be written by himself. The miscellany, started on April 4, 1840, ran until Nov. 27, 1841. The public was disappointed on discovering that the publication was not a continuous tale, though a fillip was given to the general scheme by the reappearance of Mr. Pickwick and the Wellers; but the numbers soon became only a vehicle for first the publication of *The Old Curiosity Shop*, then of *Barnaby Rudge*, the periodical ending with the completion of the latter story.

**Master Mariners, Honourable Company of.** Company formed in 1926 to forward the interests of the British merchant navy service. Incorporated 1927, it received a grant of livery from the City of London in 1932. The former Admiralty sloop *Wellington* (*g.v.*), moored in the Thames, is the co.'s h.q. and livery hall.

**Master of the Fleet.** Officer in the Royal Navy. He is the navigation expert on an admiral's staff and his duty is to arrange the anchorages of the ships when the fleet goes into harbour, etc. Whenever a royal review is held, a master of the fleet is appointed.

**Master of the Horse.** Officer of the sovereign's household. In the British royal household he is the third great officer of the court, and is a peer and privy councillor. He has control of the equeries, pages, grooms, and all the stable servants, and supervises the royal stables, stud, and kennels. Actually the chief or crown equerry is responsible for the stables and the stud. The pages of honour of the master of the horse carry the sovereign's train on state occasions.

In ancient Rome the master of the horse was an extraordinary magistrate, properly commander of the cavalry, but appointed on the occasion of a dictatorship as lieutenant of the dictator.

**Master of the King's Musick.** Originally the musician responsible for the English king's band. The appointment is now honorary rather than executive. There are records of bands being maintained at court as long ago as the reign of Edward IV, who had 13 minstrels with "trompets, shalmes, and small pypes"; and in 1660 Charles II instituted the "four and twenty fiddlers" in imitation of Louis XIV. The band of Victoria was reconstituted by the prince consort as a modern or-

chestra, and gave state concerts; but in Edward VII's reign these were discontinued. In charge of the activities of these musicians was a master of the musick (*Fr. musique*, a band). Among those who have held the post are John Eccles, 1700-35; William Boyce, 1755-79; Sir Walter Parratt, 1893-1924; Sir Edward Elgar, 1924-34; Sir H. Walford Davies, 1934-41. Sir Arnold Bax was appointed in 1942.

**Master of the Rolls.** Official of the English high court of justice. At first the chief clerk of the king's chancery, he obtained his present name, master or keeper of the rolls (*Lat. custos rotulorum*), before 1500, because he had charge of the rolls and records of the court, including the grants which had passed the great seal. Later he ceased to discharge this duty and became a judge of the court of chancery, acting as the vice-chancellor. He now presides over the court of appeal, and ranks after the lord chief justice. Before the Judicature Act of 1873, he was permitted to sit in the house of commons, the only judge enjoying that privilege. His salary is £6,000 a year, and he is usually made a peer. He has charge of the public records, this duty having been given back to him by an Act of 1838, and is chairman of the Historical Manuscripts Commission. Through the Law Society he controls the admission and conduct of solicitors. *See* Chancery.

**Master Pilot.** Rank in the Royal Air Force. Approved by the king in 1945, it is the senior rank for non-commissioned aircrew. The badge is the R.A.F. eagle in a laurel wreath surmounted by the royal coat-of-arms. It is worn on the lower part of the sleeve in the same position as a warrant officer's badge of rank. There are also master navigators, master signallers, master engineers, and master gunners in the R.A.F.

**Masters.** Term applied to unknown authors of pictures and engravings which have become famous. It is coupled with distinguishing allusions divided into two classes: (1) those distinguished by marks such as initials and dates, (2) those named from some salient characteristic of style or subject.

The most important Masters include: Master B. M., a pupil of Schongauer, who engraved *The Judgment of Solomon*, S. John in *Patmos*, etc. Master of the *Playing Cards*, c. 1446: he had great influence on engraving in the North, and examples of his work

are in Paris and Dresden. Master of 1446, a German engraver who engraved *The Passion*, *The Scourging of Christ*, 1446, the earliest engraving known. Master of 1423, a German who produced the earliest dated woodcut, S. Christopher, now belonging to Lord Spencer. Master E. S., 15th century, probably from Strasbourg; 323 of his plates are known, the chief of these, *The Madonna of Einsiedeln*, bearing his coat of arms and the date 1466. Master of the *Amsterdam Cabinet*, 15th cent., from Frankfort or Mainz; his 89 engravings are mostly at Amsterdam; he is also known as Master of the *Medieval House Book*. Master of the *Life of Mary* (or *Life of the Virgin*), 15th century, German, school of Cologne; he painted the *Life of Mary*, seven panels of which are in Munich, and the eighth, the *Presentation in the Temple*, in the National Gallery, London. Master of *Werden*, 15th century, German; four of his pictures, from the Abbey of Werden near Dusseldorf, are in the National Gallery, London. *See* Little Masters.

**Masters, Edgar Lee** (1869-1950). U.S. poet. Born at Garnett, Kansas, Aug. 23, 1869, he was made nationally famous by his *Spoon River Anthology*, 1915, a hundred bitterly satirical poems describing, in contrast to their eulogistic epitaphs, the real characters of the dead in a typical American cemetery. He also wrote *lives of Lincoln*, 1931, and *Mark Twain*, 1938. Died Mar. 5, 1950.

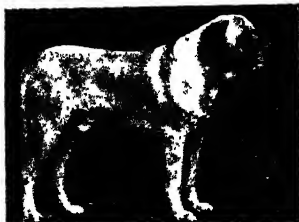
**Master-ton.** Town of North Island, New Zealand. Situated 67 m. N.E. of Wellington by rly., it is the centre of one of the finest sheep-rearing areas in the world, and produces lamb and wool for the export market. Pop. 9,535.

**Mastic.** Variety of gum resin, used in the East as a chewing gum. The resin is a product of the mastic or lentisk tree, and is obtained by cutting the bark, the liquid oozing through and hardening in yellow masses or small drops. It is extensively used in the manufacture of varnishes for map-making, and in dentistry as a tooth-stopping. The lentisk plant is indigenous to the Mediterranean coast region, and various plants yielding a similar substance are found in S. Africa, India, and S. America.

**Mastication.** The crushing or chewing of food in the mouth. This is effected by the teeth, the action of the muscles of the tongue and cheeks being to press the particles of food again and again between the teeth until they are broken up.

Mastication is an important preliminary process in digestion. See Dentistry; Food and Nutrition.

**Mastiff.** Large type of dog, now mainly kept as a watchdog. The chief breeds are the Asiatic, the



Mastiff. Champion specimen of the English breed

English, and the Bordeaux. The Asiatic mastiff, of which the Tibetan is the best known type, is figured on Assyrian monuments of c. 650 B.C. The old English breed dates back to before 55 B.C., and in medieval and early modern times was used for bear-baiting and deer-stealing.

The modern English mastiff is a large and powerful animal, possessing a keen scent, with something of the bulldog about its head, due to crossing with that breed. Its temper is variable, but it is usually docile with those whom it knows. It usually stands about 30 ins. high at the shoulder, but breeders pay more attention to points than to size. In 1949 it was said to be in danger of extinction.

**Mastitis.** Medical term for inflammation of the breast (*g.v.*). Septic material finds its way into the substance of the breast by the blood or the nipple. The breast must be slung by a wide bandage and dressed with belladonna and glycerine. Pus may have to be set free surgically. Penicillin and the sulpha group of drugs are sometimes useful in treatment.

**Mastodon** (Gr. *mastos*, breast; *odous*, tooth). Fossil elephant. The mastodon, so called from the conical tubercles or projections on its teeth, was of a more primitive type than the mammoth, and its remains are more widely scattered, fossil skeletons having been found in Egypt, Europe, N. America, and Asia. The animal lived in the Miocene age and died out during the Pleistocene. The American mastodon resembled the modern Indian elephant both in size and in shape of tusks. From remains found in 'peat bogs' it is known that

the animal fed on the leaves and bark of conifers, and was covered with a thick, woolly, brown hair much like the mammoth. See Elephant; Ice Age; Mammoth.

**Mastodonsaurus.** Fossil amphibian labyrinthodont found in rocks of the Triassic period. It was the largest known labyrinthodont batrachian, having a skull four feet in length and a body ten feet long. Its remains have been found in England, Württemberg, and India. See Labyrinthodonts.

**Mastoid.** The bony mass felt immediately behind the ear is called the mastoid process. It contains cavities of which one communicates with the middle ear and is thus liable to share any infection of the middle ear. In other days this inflammation of the mastoid often needed a severe surgical operation to save hearing or to save life. The condition usually yields to treatment with penicillin and the sulpha drugs. See Ear.

**Masulipatam** OR **BANDAR.** Port of India, in Madras. In the Kistna dist., it is situated N. of the Kistna delta, at the end of a branch rly. from Bezvada. Printed cottons, canopies, prayer cloths, etc., are manufactured, but this industry, like that of carpet weaving, is decadent. Its name means "fish-town." It was held by the rulers of Golconda in the 16th century. An English settlement was founded here in 1611, and after having been abandoned for a few years was re-established 1632. During 1686-90 it was held by the Dutch and in 1750 was given to the French by the nizam of Hyderabad. In 1758 Clive sent a force against it, and under Col. Forde it was taken in April, its capture being a brilliant feat of arms which had important results in extending the British power in India. The Church Missionary Society has a centre here, with a college affiliated to Madras university. Pop. 59,146.

**Masuria** OR **MAZOVIA.** Province of Poland. It consists of that part of the former province of East

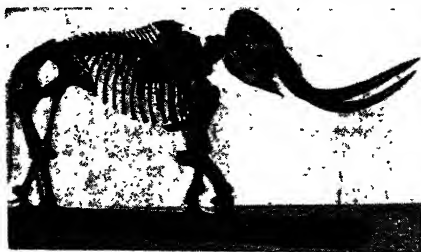
Prussia S. of a line running W. to E. just N. of Braunsberg (Pol., Braniewo) and Goldap (Goldapia). About 10,000 sq. m in area, it had a pre-war pop. of c. 1½ millions, most of whom were expelled following the Russo-Polish treaty of Aug., 1945, settling the E. frontier of Poland.

The capital of Masuria is Olsztyn (former Allenstein), and among important towns are Malbork (Marienburg), Kwidzyn (Marienwerder), Wegobork (Angerburg), Goldapia (Goldap), Olecko (Treu-), and Gombin (Gumbinnen).

Masuria was originally the southern part of the former duchy of Prussia. Some wood, paper, glass, textile, and engineering industry existed in the towns; much of its equipment, however, was destroyed or dismantled during and immediately after the Second Great War. The country is rich in timber and contains several famous hunting preserves, of which the best known is probably the Rominten heath, favourite hunting ground of William II, and later of Goering.

In the 14th and 15th centuries Masuria merged with Poland and at the same time the Masurians started to settle in E. Prussia. In plebiscites held after the First Great War the people mostly claimed German, not Polish, nationality. The Masurians have preserved numerous habits and traditions, and a wealth of popular songs and dances; their buildings, largely of timber, have often characteristic gabled porches carried by pillars. Their religion, unlike that of other Polish tribes, is well-nigh exclusively Protestant. The Polish national dance Mazurka takes its name from the tribe. The name of Masuria is also connected with two battles of the First Great War; see Masurian Lakes. For the fighting here during the Second Great War, see Russo-German Campaigns.

**Masurian Lakes.** Network of lakes, marshes, and water courses in Masuria. In the First Great War important fighting took place in this region between the Russian and German armies. Hindenburg gave the name "battle of the Masurian lakes" to the fighting of Sept. 5-15, 1914, which followed his victory at Tannenberg, when he attempted to crush the retreating Russian army. There was further heavy fighting in Feb., 1915, when Hindenburg concentrated 300,000 men against the Russian 10th army of 120,000. In the S. the Russians made a fighting retreat to the farther side of the Niemen, inflicting great losses on the



Mastodon. Skeleton of American mastodon found in Northern Yukon  
Natural History Museum, New York

German armies. To the north they were also driven from Tilisit and other towns, and one corps were forced to retreat by rly., leaving exposed the flank of the neighbouring corps, the 20th. The Germans made a heavy thrust and dispersed the 20th corps in confusion amid the forests and swamps. The latter, however, saved it from complete destruction and enabled a large number to escape to defensive lines between the Bobr and the Niemen. Here a counter-offensive had been prepared, and the Germans were slowly forced back until they reached positions only a few miles within the Russian frontier. Thus the German offensive was a failure; on the other hand, the Russians did not win back the line of the Masurian Lakes.

**Matabele** OR **AMANDEBELE**. Bantu-negroid people in S. Africa. In 1817 Umsiligazi, one of Chaka's



Matabele warrior

indunas, fled with a following of Abazanzi Zulus over the Drakensberg into the Transvaal, and dominated the Bechuana, until driven by the Boers across the Limpopo into Matabeleland in 1838. Under Umsiligazi's son Lobengula, who assumed sway in 1870, the confederation comprised the descendants of the original Abazanzi; the Abenbla derived from Bechuana war-captives; and the Maholi slaves, recruited from Mashona, Makalaka, and other unwarlike tribes. In battle the warriors used Chaka's short stabbing assagais, knobkerries, and oval shields, and raided Korana Hottentots and other aboriginal peoples. Their dialect is spoken in S. Rhodesia. They submitted to British rule in 1893 and 1896. See Africa; Bantu; Lobengula.

**Matabeleland**. District of S. Africa, now part of Rhodesia. It is named after the Matabele. It stretches from the Transvaal to Mashonaland, includes the watershed of the Zambesi and the Limpopo, is rich in minerals and fertile land. The chief towns are Bulawayo, Gwelo, and Selukwe.

Matabeleland was included in the grant made to the British S

Africa co. in 1889, this following a treaty between the tribal king, Lobengula, and Cecil Rhodes. The first settlements made by the new company were in Mashonaland, and against them the Matabele directed their raids, the successors of those against the Mashonas. In 1893 they were particularly active, and L. S. Jameson, with about 1,000 white men, marched to Bulawayo, Lobengula's capital. Twice the Matabele attacked in great force, only to be repulsed with heavy loss, while a third victory was won by a body of allies from Bechuanaland. Bulawayo was entered and Lobengula fled, and it was while pursuing him that Allan Wilson and his small force were killed, on the Shangani river. The Matabele were crushed, and their country became in reality part of the territory under the chartered company. Settlers entered the land and there was a spell of feverish activity in developing it.

In March, 1896, the Matabele rose in rebellion, seizing the opportunity offered by the Jameson Raid. They had legitimate grievances, but their savage methods of warfare were a danger to the white community. There was much fighting, but the struggle was ended after a meeting between Rhodes and the chiefs of the tribe in the Matopopo Hills in Sept. The country then settled down as an integral part of Rhodesia. See British S. Africa Co.; Rhodes, C. J.; Rhodesia; S. Africa. Consult The Downfall of Lobengula, W. A. Wills and L. T. Collingridge, 1894; The Matabele Campaign, R. S. S. Baden-Powell, 1897; Matabele Journals of Robert Moffat, ed. J. P. R. Wallis, 1945.

**Matadi**. River port of the Belgian Congo. Situated 70 m. above the mouth, it is the highest point to which ocean steamships can ascend the Congo. It is connected with Léopoldville by a rly. of 255 m., and forms the chief exporting and importing centre of the country. The rly. has been improved, and transport on the Congo and its tributaries has been much accelerated. Matadi is in the province of Léopoldville.

**Matador** (Sp., killer). Highest rank among professional bull-fighters. He is the man who has the task of actually killing the bull. See Bull-Fighting.

**Matagalpa**. Dept. and town of Central Nicaragua. Bounded S. by the river Matagalpa, the dept. is mostly mountainous and is intersected by the Rio Grande. Sugar,

coffee, and tobacco are cultivated. Matagalpa, the capital, stands in a high mountain valley. Population (estimated) 50,000.

**Mata Hari** (1876-1916). Dutch spy. Margaret Gertrud Zelle was born at Leeuwarden, Aug. 7, 1876, and married a captain of the Dutch colonial forces named MacLeod, in 1895. She lived with him in Java until 1901, studied the ritualistic dances of the East, and on her return to Europe adopted the name Mata Hari (Eye of the Morning, Star of the Evening), cultivating a popular belief that she had been born in Java, was a half-caste, and had been a temple dancer. As a dancer at the Musée Guimet, Paris, in 1905, she was an immediate success, and went on to become a well-known courtesan. At the outbreak of the First Great War her influence over French and German military and diplomatic officials was supreme; she betrayed secrets to both sides until arrested by the French and executed as a spy, Oct. 15, 1916.

**Matamoros**. Town of Mexico in the state of Tamaulipas. It stands on the S. bank of the Rio Grande and opposite the town of Brownsville, Texas, U.S.A., being a customs port of entry to Mexico. It is 842 m. N. of Mexico City, the journey taking 33 hours by train. It is on the main inter-American highway. In the vicinity is an important cotton-growing region. Cattle, cotton, hides, and maize are also produced. Population (estimated) 18,000.

**Matanzas**. West-central prov. of Cuba. It borders the Strait of Florida and has an area of 3,256 sq. m. Hilly in the N., where the



Matador in the costume of the bull-ring

surface reaches 1,310 ft., it slopes to the S., where large expanses are swamps. Sugar, bananas, etc., are produced. Area 3,256 sq. m.; pop. 364,128.

**Matanzas**.

City of Cuba. The capital of the prov. of Matanzas and the second seaport of the island, it lies at the head of Matanzas Bay, on the N. coast, 63 m. by rly. E. of Havana, to



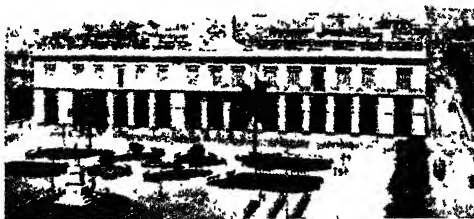
which it is also connected by the central highway. It has a well-sheltered but partly silted harbour and vessels lie in a roadstead and discharge by lighter. The town consists of three portions separated by the rivers San Juan and Yumuri, and among its larger buildings are the government building, theatre, casino, and lyceum. Matanzas has petroleum and sugar refineries, distilleries, rly. workshops, and manufactures of leather, boots and shoes, and cord, and its chief exports are sugar, rum, and molasses. The city dates from 1693. Pop. 72,826.

**Matapan, BATTLE OF CAPE.** Sea action of the Second Great War. The victory of Cape Matapan, March 28, 1941, so named from the point of land nearest to the scene of action, was the fruit of skilful cooperation between ships and aircraft of the Royal Navy. In 39 months of war the Italian fleet never showed any disposition to risk a battle, though in material strength it was at all times superior to the British Mediterranean fleet. To force it to fight was the constant endeavour of the British c.-in-c., Admiral Sir Andrew Cunningham; and at Matapan he did his utmost to bring about a general action.

At noon on March 27, 1941, three Italian cruisers and four destroyers were sighted by air reconnaissance almost midway between the toe of Italy and the Peloponnesus, steering in a S.E. direction. In the hope of intercepting this force, the Mediterranean fleet sailed from Alexandria at dusk the same day, when there was least chance of its movements being reported to the enemy. Four cruisers and four destroyers under the second-in-command, Vice-Admiral H. D. Pridham-Wippell, were ordered to rendezvous next morning south of Gavdhos, an islet lying to the southward of Crete.

The battle fleet, comprising the battleships *Warspite* (Cunningham's flagship), *Barham* (flagship of Rear-Admiral H. B. Rawlings), and *Valiant*, the aircraft carrier *Formidable* (flagship of Rear-Admiral D. W. Boyd), and eight destroyers, followed at the best speed of which the three battleships were capable.

One of the *Formidable's* aircraft sighted the Italian squadron soon after dawn on March 28, about 30 m. S. of Gavdhos, steering S.S.E. At 7.45 a.m. the Italians were in sight of Pridham-Wippell's ships. To draw the enemy towards the battle fleet, he turned to



Matanzas, Cuba. The Plaza, with harbour beyond

the S.E., and for over an hour they followed the bait thus held out to them, though they did not get within gun range. Just before 9 a.m. the enemy squadron reversed its course and was in turn pursued by the British. Apparently the Italians were also trying to set a trap, for just before 11 the big new battleship *Vittorio Veneto* appeared about 16 m. to the northward, and opened fire with her 15-in. guns on the British.

Almost at the same moment the *Vittorio Veneto* was sighted by Albacore torpedo aircraft from the *Formidable*, which had been ordered to attack the Italian cruisers. They turned on the new target, and inflicted a hit which reduced the *Vittorio Veneto's* speed by 50 p.c. and caused her to turn away to the westward.

As soon as the British cruisers had effected a junction with the battle fleet, at 12.30 p.m., a second air striking force flew off from the *Formidable*, and hit the Italian battleship with two more torpedoes. From this operation one of our aircraft was missing, the only loss suffered by the British fleet throughout the action. A second Italian force of five cruisers, which had been sighted in the meantime, showed no sign of wishing to come closer, but made off to the N.W. at 30 knots. Naval aircraft from Maleme, in Crete, carried out a third attack on the retreating Italian forces, and succeeded in torpedoing and disabling the 10,000-ton cruiser *Pola*. To her aid went three other cruisers and some destroyers, while the rest of the Italian ships promptly proceeded homeward.

At 10.25 p.m. these lagging cruisers were sighted by the *Warspite*. Searchlights were switched

on by the attendant destroyers, and the *Warspite* and *Valiant* simultaneously opened fire on the *Fiume*, of 10,000 tons; she at once burst into flames. A second cruiser was set on fire by the *Barham*. All three battleships then concentrated their fire on a third ship. Enemy destroyers which fired torpedoes at the British battleships were also fired upon, and two were sunk. British destroyers completed the destruction of the three sister cruisers *Fiume*, *Pola*, and *Zara*, which offered little resistance. In the *Pola* discipline appeared to be non-existent. This night battle was the first occasion on which ship-borne radar was used in a major action. See Mediterranean Campaign.

**Mataro.** Seaport of Spain. 20 m. N.E. of Barcelona and in that province. It has manufactures of linen and cotton goods, soap, and chemicals, while wine is produced in the neighbourhood. Pop. 24,700.

**Match** (Fr. *mèche*, from late Lat. *myza*, wick). Word commonly applied to a small piece of wood, waxed thread, or other material, tipped with a substance which can be ignited by friction and used to ignite other objects.

The first form of match consisted of splints tipped with potassium chlorate and sugar held together by gum. These were ignited by touching with concentrated sulphuric acid carried in a bottle. The lucifer match, invented in 1827, had a head of chlorate of potash and sulphuret of antimony, and was ignited by drawing the match head through a strip of glass-paper. That combination has been superseded by others, but all matches which can be struck on some rough surface have as their basic ingredients one substance rich in oxygen and another which easily combines with oxygen, the reaction between the two taking place with the evolution of heat on the application of friction. Potassium chlorate and phosphorus are two examples.

In the safety match, invented in the middle of the 19th century, the phosphorus was separated from the composition on the match and transferred to the friction surface on the base. In many safety matches the head of the match is a mixture of potassium chlorate and antimony sulphide and the rubbing surface on the box contains red phosphorus. The use of yellow phosphorus for matches is now everywhere prohibited; but sesquisulphide of phosphorus, which





Match. Stages in manufacture. 1. Veneering from log of wood for match splints. 2. Charging magazine with splints which are put through a machine for coating heads with composition. 3. Revolving drum for drying matches after heads have been coated. 4. Another view of drying drum. 5. Matchbox-making machine. 6. Boxes of matches coming off the machine

lights readily with a moderate amount of friction, is used on match heads that strike anywhere.

Aspen and white pine are the chief woods used in match manufacture. The wood is cut into splints when green by special machinery, the usual method consisting in slicing off a veneer of match thickness, which is afterwards cut into bands or ribbons the length of the match. These ribbons are sliced in layers into match sticks. The dried sticks are fed into dipping frames which hold several thousand, and dipped in the composition. Round matches are cut by a machine with circular hollow cutters. Many matchmaking machines will cut nearly a million matches an hour. To lessen the risk of fire from burnt matches, the sticks are dipped in a fireproofing salt, which prevents smouldering.

Book matches, a 20th century innovation, are prepared by inserting the cardboard, already cut to shape, in a frame, and dipping it first in paraffin wax, and then in a safety match composition. When the dipped cardboard is dry enough, it is stitched into a cardboard cover on which the friction surface has been mounted.

The matchmaking industry is controlled by special laws in most countries, aiming at the abolition of the use of white phosphorus, e.g. the White Matches Prohibition Act, 1908, in Great Britain.

**Match Duty.** Tax on the consumption of matches. In the United Kingdom customs and excise duties were imposed on matches by the Finance Act of 1916 at the rate of 5s. or 3s. 4d. per 10,000 matches, the former being when they were 80 or less in a box, and the latter when that number was exceeded. In addition, match manufacturers pay £1 a year for a licence. A previous attempt to introduce a tax of this kind had been made in the budget proposals for 1871-72. Robert Lowe, afterwards Lord Sherbrooke, introduced it with the jesting motto, *Ex luce lucellum* from light a little gain. The match manufacturers of London organ-

ized a procession of workers, chiefly women, to Westminster by way of protest, which caused the withdrawal of the proposed tax. In the U.S.A. the use of white phosphorus was checked by a heavy tax on matches made thereof. In France the making of matches is a state monopoly.

**Matchlock.** Hand gun in which the charge is fired by the application of a smouldering match to the touch-hole by a mechanical device actuated by moving a lever. The first hand guns, which came into use early in the 15th century, like the larger weapons, consisted of a simple iron or brass tube with a touch-hole on the top the charge being fired by the application of a piece of smouldering, loose-spun cotton, or hemp cord, which had been soaked in a strong solution of saltpetre, and was called the match. Later, the touch-hole was moved to the side of the barrel and a flash-pan provided, the latter occasionally being fitted with a pivoted cover. To speed up firing, in some of the later weapons a roll of burning slow match was carried on the barrel, at



Matchlock. Early 16th century type. A piece of smouldering match was carried on the barrel to ignite the match on the serpentine (or curved lever) when a shot was about to be fired

which the yarn in the serpentine could be ignited just before it was desired to fire a shot. The matchlock was invented about 1460. In its earliest form it consisted of a serpentine (a curved lever) pivoted in a hole in the stock, which carried the burning match, and so balanced that the match was held away from the touch-hole until the end of the lever under the stock was pressed, when the glowing match was pushed into the flashpan and the charge fired. Matchlocks are still used by various tribes in Asia and in N. Africa. See Flintlock; Gun; Musket.

**Mate.** Literally a companion or equal. The word is sometimes used for a husband or wife. It is also used colloquially by workmen for those who work with them.

In the British navy, the rank of mate was held until 1861 by officers immediately junior to lieutenants, but in that year the rank of sub-lieutenant was substituted for it. In 1913 the title was again revived. With the double object of meeting the shortage in junior officers and of encouraging merit among the younger warrant officers and the petty officers and men of the fleet, the Admiralty directed that a number—originally fixed at 100—of the best of these should be selected for appointment as mates (ranking with sub-lieutenants), who would be advanced to the rank of lieutenant after two years or longer, according to their abilities. The rank was abolished in 1922. In the merchant service a mate is relatively a much more important officer, the first mate, or first officer, of a ship, ranking next after the captain.

**Mate or PARAGUAY TEA.** Dried and powdered leaves of *Ilex paraguayensis*, infused and sweetened with sugar. It is sucked up through a special tube which strains off the leaf particles, is aromatic and somewhat bitter, and has refreshing and restorative effects. Large quantities are consumed in Argentina and Brazil. *I. paraguayensis* is a tree allied to the holly, *Ilex aquifolium*.

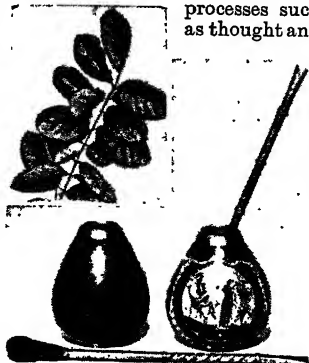
**Mateotti, GIACOMO** (1885–1924). Italian politician. Leader of the Socialist Unitario party in the parliament which assembled in 1924, he made a speech in the chamber charging the fascist party with terrorism and trickery in the conduct of the elections. Shortly afterwards, on June 10, he was abducted, many believed at the instigation of Mussolini, and his body, stabbed to death, was found three days later buried in a lonely

spot 12 m. from Rome. Fascist leaders were accused of complicity, and four of them—Marinelli, administrative secretary of the party; Filippelli, editor of the *Corriere Italiano*; Rossi, head of the official press bureau; and Naldi, editor of the *Nuovo Paese*—were arrested, together with others accused of the actual murder. Tried at Chieti, some of the accused were found guilty of unpremeditated accidental homicide, and sentenced to short terms of imprisonment; their associates were released. The horror caused by this political assassination threatened for a time to cause the overthrow of the fascist govt.

After the fall of the fascist regime the accused men, only four of whom were in court, the others being tried in their absence, were brought to trial a second time; and in April, 1947, Dumini, Poveromo, and the absent Viola were sentenced to 30 years' imprisonment. Rossi and Giunta, with others who were absent, were acquitted.

**Matera.** City of Italy, in the prov. of Matera. It is 42 m. E. of Potenza, and contains the cathedral of the archbishopric of Acerenza and Matera. At Monte Scaglioso, near by, are stone quarries and troglodyte caverns, still inhabited, and caves with 13th century wall paintings. Pop. 22,069.

**Materialism.** Theory that regards matter as the prime cause of everything, even of mental processes such as thought and



Maté. Gourds, for holding the liquid tea, and bombillas through which it is sipped. Top, left, the leaves of the plant

consciousness. Materialism differs from hylozoism (*q.v.*), which is essentially a kind of pantheism not incompatible with religion, in that it leads, if carried to its logical extreme, to atheism and the most selfish form of eudaemonism.

According to the materialists all knowledge has its origin in sensation, merely consisting of transformed sensations; intellectual life is nothing but the result of mechanical combinations and interactions of matter. The soul itself is only a phenomenon of the brain; when the latter perishes, the soul perishes with it. Everything in the world takes place according to certain fixed, unalterable laws. There is no room for a God as Creator, or as a supernatural being capable of arresting or altering the course of nature. On the other hand, it should be remembered that we do not really know matter as it is, but only as it appears to us in the form of external phenomena; again, materialism is not capable of explaining the origin of mental processes from matter, since the combination and interaction of material elements can produce only material, not spiritual, results. See Free-thought; Theism.

**Materia Medica.** British medical publication. Produced by the British Medical Association, it first appeared in 1852 and deals with that branch of medical science which treats of drugs, their properties, doses, and uses, and their action on the body.

**Maternity Benefit.** Name given in Great Britain to money payable by the state to the wife of an insured man, or to an insured woman, on the birth of a child. Such benefit is a usual feature of state insurance systems.

In Great Britain a maternity benefit of 30s. was introduced under the National Insurance Act of 1911 and was raised to £2 in 1926; if a man and his wife were both insured, double benefit was payable. Under the National Insurance Act, 1946, benefit from July 1, 1948, was raised to a maternity grant of £4 on the birth of a child, with in addition 36s. a week for 13 weeks to a mother gainfully occupied, provided she gave up work for that period, attendant's allowance of £1 a week for four weeks to a mother not gainfully employed, these additional payments being subject to certain qualifying conditions.

**Mathematics** (Gr. *mathēma*, learning). The science of number and space and of all their relations. Some writers distinguish between mathematics, the methods used to discover certain truths, and Mathematics, the truths or relations discovered.

Mathematics is a unity, but for convenience in presentation it is usually subdivided into pure

mathematics and applied mathematics. The former may be divided into arithmetic, algebra, geometry, trigonometry, calculus, etc.; or it may be divided into geometry, the study of space and of spatial relations, and analysis, which includes arithmetic and algebra and deals with numbers, the relations between numbers, and the operations performed. In practice, however, the distinction between geometry and analysis is not clear-cut. Applied mathematics comprises the methods adopted to solve problems of mechanics (statics and dynamics) and other aspects of natural science and, more recently, problems of social science and technology.

The range of applied mathematics is as extensive as science itself, for research into, say, the relative value of artificial fertilisers no less than research into the structure of the atom uses mathematical techniques.

#### An Ancient Science

Mathematics, like most other sciences, has developed through the operation of two causes, human wonder and curiosity and human need, the desire to find out and the desire to learn how to do something. The earliest known civilizations had some method of counting and of recording possessions. Geometry (literally, measurement of the land) seems to have begun through the need of the Egyptians to restore the boundaries of land after the Nile inundations, and in the need of accurate measurement of size and direction in the building and orientation of the pyramids. The ancient Greeks, although freely using the knowledge gained from the Egyptians, developed geometry principally as an intellectual exercise. It speaks much for their work that parts of the elements of Euclid (330–275 B.C.) remained the English schoolboy's usual introduction to geometry until the 20th century. Pythagoras (c.550–500), Eudoxus (408–355), Euclid, and Apollonius (260–200) contributed to the foundation of mathematics. Archimedes (287–212) has been ranked with Newton and Gauss for his mathematical discoveries.

The Greeks, however, lacked the advantage of the greatest mathematical invention, the use of the zero and decimal notation. This seems to be of Hindu or Arabic origin, as are the beginnings of algebra, introduced into Italy in the 13th century.

Descartes (1596–1650) considerably improved its notation and methods; but he is principally remembered as the great originator of analytical or co-ordinate geometry, which applied algebraic methods to geometrical problems, and revolutionised mathematical conceptions and processes. A century later, Isaac Newton and Leibniz shared the honour of introducing the calculus, a tool of immense power, particularly in the application of mathematics to the problems of natural science, an activity in which Newton himself excelled.

The rich territory thus opened up through analytical geometry and the calculus has since yielded an abundant harvest through the discoveries of Gauss, Lagrange, Laplace, Poncelet, Hamilton, Abel, Weierstrass, Riemann, Cantor, Einstein, and many other giants, so that mathematics has not only revealed characteristics of the universe that would otherwise have remained hidden, but has provided investigators in every field with precision instruments far beyond the wildest dreams of the great Galileo.

It is no longer possible for any individual to see the limits either of mathematics or of mathematical methods. But it is not difficult even for the mediocre mathematician to agree with Bertrand Russell, "Mathematics, rightly viewed, possesses not only truth but supreme beauty . . . capable of a stern perfection such as only the greatest art can show." See Archimedes; Gauss; Newton, etc.; Algebra; Arithmetic; Calculus; Trigonometry, etc.; consult also Introduction to Mathematics, A. N. Whitehead, 1911; Short Account of the History of Mathematics, W. W. R. Ball, 5th ed., 1912; Mathematics for the Million, L. Hogben, 1937.

H. Watson

**Mather, Cotton** (1663–1728). American Colonial divine. One of a famous Puritan family, and grandson on his mother's side of John Cotton (1585–1652), he was born at Boston, Mass., Feb. 12, 1663. At Harvard he took his B.A. degree at 15, and becoming with his father, Increase Mather, co-pastor of the North Church in 1684, remained associated with it until his death. A notable linguist, he published some 400 works, notably *Magnalia Christi*, or Ecclesiastical History of New England, 7 vols., 1702, new ed., 2 vols., 1853; and left voluminous MSS., including a treatise

on medicine and a Scripture commentary in 6 vols.

Eminent as preacher, pastor, and philanthropist, a genius of curiously complex character, partly saint and partly fanatic—he inaugurated trials for witchcraft—he was thrice married, the third time unhappily, and, suffering through the dissolute character of his son Increase, met death, Feb. 13, 1728, with the words, My last enemy is come; I would say, my best friend. *Consult* Lives, B. Wendell, 1891; A. B. Marvin, 1892.

**Mather, Increase** (1639–1723). American Colonial divine. Born at Dorchester, Mass., June 21, 1639, he was the youngest son of Richard Mather (1596–1669), who, suspended for nonconformity, left Lancashire in 1635. Educated at Harvard and Trinity College, Dublin, Increase became a preacher in Devon and Guernsey, but refusing to conform at the Restoration, went to Boston, where he was ordained pastor of the North Church, June 6, 1664. He retained this office until his death, Aug. 23, 1723, and was also president of Harvard, 1685–1701. In 1662 he married Maria, daughter of John Cotton, by whom he had three sons and seven daughters. Noted for his love of learning and Puritan zeal, he secured an enlarged charter for Massachusetts under William III.

**Mathew, Theobald** (1790–1856). Irish temperance advocate. Born at Thomastown, near Cashel,



Theobald Mathew,  
Irish temperance  
advocate

Oct. 10, 1790, he studied at Maynooth, entered the order of S. Francis, was ordained in 1814, and given charge of a little chapel in a poor part of Cork. He laboured to secure education for the poverty-stricken people, and then in 1838 began to exercise his remarkable magnetic influence in the cause of total abstinence. At one time his followers are said to have numbered nearly half the adult population of Ireland, and his activities were reflected in a fall of 40 p.c. in the revenue from Irish spirits and in a great decrease in crime. Father Mathew visited London in 1843 and America in 1849, drawing crowds of converts to total abstinence. He died at Queenstown (Cobh), Dec. 8, 1856. There is a memoir by J. F. Maguire, 1863.

**Mathews, CHARLES** (1776–1835). British comedian. Born in London, June 28, 1776, the son of a bookseller, he



Charles Mathews,  
British comedian

was educated at Merchant Taylors', and was engaged by the Theatre Royal, Dublin, in 1794, coming to London in 1803. Among the parts he played was that of Sir Fretful Plagiary in *The Critic*, a performance which Leigh Hunt regarded as perfect. Mathews's greatest success, however, was in the rôle of entertainer, in which capacity he became immensely popular on both sides of the Atlantic. He died at Plymouth, June 28, 1835.

**Mathews, SIR CHARLES** (1850–1920). British lawyer. Born in New York, Oct. 16, 1850, he was educated at Eton.

He was called to the bar at the Middle Temple, 1872, and rapidly built up a large practice in criminal cases. Eloquence and power of cross-examination in many famous cases, including the Penge mystery, the trial of Lamson for murder, and the Mignonette case, brought him into prominence. In 1885 he was made a revising barrister, and in 1888 senior counsel to the treasury at the Old Bailey, in which capacity he took part in nearly all the celebrated criminal trials for some years. In 1907 he was knighted, receiving a baronetcy ten years later, and from 1908 was director of public prosecutions until his death, June 6, 1920.



Sir C. Mathews,  
British lawyer  
Russell

**Matico.** Dried leaves of a species of pepper, *Piper angustifolium*, belonging to the family Piperaceae. Native to Brazil and Bolivia, it is used in medicine as a styptic. An infusion or tincture forms an agreeable tonic and stimulant, its astringent properties being especially useful in catarrh of the bladder in aged patients.

**Matilda** (d. 1083). Queen of William the Conqueror. A daughter of Baldwin, count of Flanders, and a descendant of Alfred the Great, she married the duke of Normandy in 1053. Pope Leo IX had previously forbidden the marriage on the ground that the parties

were related, but the exact relationship, if any, has never been decided, and many stories, mostly fictitious, have been told about the supposed impediment. Pope Nicolas II finally granted a dispensation in 1059. Matilda ruled Normandy during her husband's absence in England, and was crowned queen of England at Westminster in 1068. She spent much time in Normandy, where she died Nov. 3, 1083, and she was buried in the church she built at Caen.

**Matilda OR MAUD** (1102–67). Queen of England and empress. Daughter of Henry I of England, she married the emperor Henry V (q.v.) in 1114. On the death of her husband in 1125 she returned to England and, being the only surviving child of Henry, was proclaimed heiress to the throne. In 1128 she married Geoffrey of Anjou, a step which created discontent amongst the nobles, so that, upon her father's death in 1135, Stephen was able to seize the crown without opposition. Matilda, who had been with her husband in France, landed in England in 1139, and, assisted by Robert, earl of Gloucester, defeated Stephen at Lincoln, 1141, and was crowned in London. The country was, however, in a state of civil war, and finding it impossible to make her claim effective Matilda returned to Normandy, leaving her son, afterwards King Henry II, to establish his claim to the crown. She died Sept. 10, 1167. See Stephen.



Matilda,  
Queen of England

**Matilda** (1046–1115). Italian countess, known as the Great Countess. Daughter of Boniface II, count of Tuscany, she married in 1070 Godfrey V, duke of Lorraine, who died in 1076. On his demise Matilda joined the papal party against the emperors, and in 1077 Henry IV of Germany tendered his submission to Gregory VII at her castle of Canossa. She steadily supported the pope, and fought unaided against the emperor. In 1089 she married Welf, duke of Bavaria, at the time only 18 years of age, but this marriage was dissolved in 1095, and on her death, July 24, 1115, the whole of her vast estates, including Tuscany, Modena, Reggio, Brescia, Mantua, and Ferrara, were claimed by the Holy See in virtue of a grant made

by Matilda in 1077 and renewed in 1102. See Gregory VII.

**Matilda Tank.** An armoured vehicle used in the Second Great War by the British army. Popularly known in the army as the Waltzing Matilda, it went into service early in 1942, and was used with infantry for attacks on prepared positions. The vehicle weighed 28 tons and had a maximum speed of 16 m.p.h. It was armed with one 2-pr. and one Besa gun mounted in a turret.

**Matin, Læ** (Fr. the morning). French daily newspaper. Founded in 1884 by an American, A. C. Edwards, from 1900 it was owned by the French financier Bunlaux-Varilla. Bourgeois and nationalist in tone, it had a circulation up to 2 millions, a large network of correspondents abroad, and considerable influence. It was abolished by the Nazis in 1940, but revived under new editorial and business management after the liberation of France.

**Matins OR MATTINS** (Lat. *matutinus*, belonging to the morning). Ancient name for early morning prayers. In the English Prayer Book of 1549 the service of morning prayer was called matins; the words morning prayer were substituted in 1552, but the old word is retained in the tables of proper lessons and proper psalms. The existing service is formed from the ancient services for matins, lauds, and prime. The hour of matins has varied. Early custom favoured a time before daybreak; later, 6 or 7 a.m. was usual; and in 1714 the service was first held on Sundays in London at 11 a.m. See Canonical Hours.

**Matisse, HENRI** (b. 1869). French painter. Born at Le Cateau, Dec. 31, 1869, he went to Paris in 1892 to complete his training as a barrister, but, abandoning the law, studied at the Beaux-Arts under Moreau. After experimenting with impressionism, he became a leading member of the revolutionary Fauves, declaring that he aimed at the utmost simplification. Primarily that of a designer and decorator, his style was characterised by large, flat areas of pure colour, and his abstractions, with distortion of the person in the manner of El Greco, represent the height of his intellectual conception of form. By painting what his eye immediately saw, Matisse achieved an integral vision that had a profound effect upon contemporary artists, notably Derain (q.v.). Influenced by negro art, he painted portraits, land-



Matisse. A still-life painting by Henri Matisse; it was exhibited at the Paris Salon in 1944

Photo, Marc Fauz

scapes, still life, and interiors. A brilliant lithographer, he illustrated Mallarmé's *Poésies*. He is represented in the leading European and American galleries; two of his best-known paintings, *Odalisque* and *Le Buffet*, are in the Luxembourg, Paris. Consult A Study, R. Fry, 1930.

**Matlock.** Name of several adjacent places in Derbyshire, England, comprising an urban district. Matlock is a market town and parish, standing on the Derwent. It is 17 m. N. of Derby, on the A6 road, and has a rly. station. Its chief industries are making and bleaching cotton, flour and colour mills, and quarrying limestone. Market days, Tues. and Fri.

Matlock Bath, a mile to the S., has been famous for its medicinal waters since 1698. Matlock Bank has hydropathic establishments. The Matlocks are famous for their beautiful surroundings, which include High Tor and other rocks along the Derwent, and stalactite caverns visited by thousands every year. Pop. est. 17,500.

**Matoppo Hills.** Range of hills in S. Rhodesia about 18 m. S.E. of Bulawayo. The district is about 100 m. long, its greatest breadth being 25

m., and covers an area of, 1,040 sq. m. It is a wild region, in parts almost inaccessible, but crossed by fertile valleys. The grave of Cecil Rhodes is situated on The World's View, in a national park which contains a small preserve for African game and the Matoppo Dam built to irrigate the surrounding country. The cemetery was consecrated by Rhodes to those who deserved well of their country, and contains the remains of Major Allan Wilson and Sir Starr Jameson.

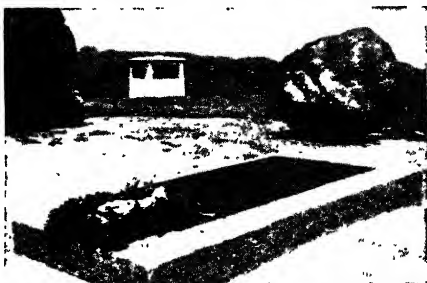
The hills proved impregnable when held by the Matabele during the rebellion of 1896-97.

**Matriarchy** (Lat. *mater*, mother; Gr. *archê*, rule). Form of social organization under which personal rights, duties, and restrictions are determined from the maternal side. Social anthropologists tend to prefer the alternative term "mother-right." It is threefold in form—matrilineal, in which descent and inheritance are reckoned along the mother's line; matri-local, in which the wife

resides with her own people, the husband being an occasional or permanent guest; and matri-potestal, in which child control and choice of mate rest with the mother and her people, often with

her brother as head of the family. In aboriginal America mother-right in its three-fold form is present among the Seri and the Pueblo Indians at opposite ends of primitive culture. The theory of a primeval promiscuity which passed into matriarchy, and this into patriarchy, lacks support. See Family.

**Matriculation** (Lat. *matricula*, public register). Process of admittance to the membership of a university or college. In any university admittance is conditional on evidence that the student has attained prescribed standards in a number of specified subjects, either in the examination for the general certificate of education, conducted at his school, or at an examination conducted by the university. The subjects demanded comprise English and four or five other subjects, including a foreign language, and mathematics or an approved science, and at Oxford and Cambridge Latin or Greek. Until 1951 the London matriculation examination was taken by hundreds of students merely as a certification of



Matoppo Hills, Matabeleland. Grave of Cecil Rhodes; in the background is the memorial to the British who fell fighting against the Matabele, Dec. 4, 1893

general education. The matriculation examination at Oxford is called Responsions; at Cambridge the Previous examination or "little-go." See University.

**Matrimonial Causes Acts.** Acts of parliament regulating proceedings between husband and wife relating to their marriage. That of 1857 removed matrimonial causes from the jurisdiction of the ecclesiastical courts and set up a new court for divorce and matrimonial causes. For the first time it gave a court power to grant divorce, which formerly was possible only by Act of parliament. After further changes had been made in the law of divorce, the Matrimonial Causes Act of 1937 widely extended the ground for divorce and nullity. See Divorce; Marriage; Nullity.



Matlock, Derbyshire. Matlock Bath, in the wooded dale watered by the river Derwent

**Matrix** (Lat., wombl., Word used in several senses. (1) The material of a mould in which an object is shaped or formed. (2) In geology, the material in which a different substance, e.g. a fossil or diamond, is embedded. (3) In concrete, the hydraulic lime or cement, combined with water, which binds the sand, stone, etc., with which it is mixed, and which is termed the aggregate. (4) In typefoundry, a metal mould for casting type. (5) In electrotyping and stereotyping, a flong or mould, usually of papier-mâché, which contains the impression of a page of type, and from which plates are cast for printing. (6) In a linotype machine, a brass plate with an intaglio of the letter it is to produce in relief. (7) In metallography, the ground mass or last-freezing constituent in which other constituents appear embedded. (8) In powder metallurgy, that metallic constituent of a powder mixture which has the lower melting point and melts during sintering. See Electrotyping: Linotype; Printing.

**Matron** (Lat. *matrona*, married woman). Term of Roman origin, used at first for a married woman of unblemished character. This idea has persisted, but the word now refers chiefly to a mature woman, not necessarily married, who is the head of a hospital or orphanage, and to one who has charge of the domestic arrangements of a school or college. There is a matron-in-chief directing Queen Alexandra's Imperial

Military Nursing Service, who is attached to the department of the adjutant-general at the War office. Queen Alexandra's Royal Navy Nursing Service is controlled by a matron-in-chief at the Admiralty. A jury of "matrons or other discreet women" was formerly empanelled if a woman found guilty of a capital offence pleaded she was pregnant and asked for execution to be postponed on that account. These juries were abolished in 1931, and the

pregnancy of a woman in such circumstances is now decided by the jury which tried her. If found pregnant, she cannot be sentenced to death.

**Matronalia.** In ancient Rome, festival celebrated by married women in honour of Juno on March 1. Crowned with flowers, they went in procession to the temple of Juno Lucina on the Esquiline, and offered up prayers for the happiness of married life.

**Matsoth** or **Mazzoth.** Jewish unleavened bread. This Hebrew word is derived either from *matsets* or *matsah*, meaning pressed, because the bread is as though pressed together; or from an Arabic word which signifies pure and sincere, implying that the bread is made from pure flour and water with no admixture. Eaten at the Feast of the Passover with the paschal lamb, it is baked in large, very thin pieces. The word is also commonly spelt *matzos*.

**Matsue.** Town of Japan, in Honshu. It is in the S.W. of the island, near the W. coast, on a narrow strip of land between Lake Shinji-Ko and a sea lagoon, on the banks of a river which connects these sheets of water. Raw silk, ginseng, lacquer, and pottery are the chief products. Pop. 38,000.

**Matsumoto.** Town of Japan, in Honshu. It is situated on the Central rly, 115 m. W.N.W. of Tokyo, and is a tourist centre for the "Northern Alps of Japan," which lie W. of the town. There is a trade in raw silk. Pop. 36,000.

**Matsuoka, Yosuke** (1880-1946). Japanese diplomatist. He was born at Yamaguchi-ken, and educated at Oregon university, U.S.A., where he became converted to Christianity. After 15 years in the Japanese diplomatic service he was appointed secretary to the premier in 1918. Matsuoka was Japanese delegate to the League of Nations, and became foreign minister in 1940. The next year he signed a non-aggression pact with Russia and allied Japan more closely with the Rome-Berlin axis. He went out of office in July, when the Konoye cabinet was reshuffled. On Jan. 23, 1946, he was arrested in Tokyo as a war criminal, and he died in hospital on June 27.

**Matsushima.** Group of islets of Japan on the E. coast of Honshu. Matsushima Bay is a small section of Sendai Bay, from which it is separated by the archipelago. The scenic beauties of the pineclad group, which includes over 800 islands, make it one of the show places of Japan. It is reached from Tokyo by the E. coast rly. to Shiogama. Miyakojima and Sabusawa are the only inhabited islets. Matsushima village occupies almost the middle of the curved coast of the bay.

**Matsuyama.** Town of Japan, in Shikoku, connected by light rly. with Mitsu, its port, 4 m. to the N.E. on the E. coast of the Inland Sea. Pop. 48,000.

**Matsya** (Skt. fish). Name of a short-lived union of four Indian states—Alwar, Bharatpur, Dholpur, and Karauli—which was formed March 17, 1948, the maharajah of Dholpur being president. The states were integrated with Rajasthan (*q.v.*) on May 15, 1949.

**Matsys** or **Massys, Quinten** (1466-1530). Flemish painter. Born at Antwerp or at Louvain, he was a pupil

of either Albrecht Bouts or Schongauer, but the main early influence was that of Dierick Bouts. The chief pictures of his early period are *Madonna and Child* (Brussels), *S. Christopher*, and *Virgin at Prayer* (Antwerp). The painting, *Our Lady of the Seven Sorrows*, at Brussels, is assigned to Matsys, and is supposed to be the large painting made for the Hall of the Guild



Quinten Matsys, Flemish painter  
Etching by L. Girton



Matsys. A Money-changer and his Wife, painted by Quinten Matsys in 1518, and now in the Louvre, Paris



in 1505. The Crucifixion, in the National Gallery, London, is one of many Calvary pictures painted about that date. Of his later works The Magdalen and Madonna Enthroned are noteworthy. His portraits are remarkable. He painted genre pictures in a satirical vein, e.g. a Money-changer and his Wife, 1518 (Louvre). He died at Antwerp.

**Mattawa.** Town and river of Canada, in Nipissing dist., Ontario. The river is 50 m. long and flows into the Ottawa river at the town, which is on the C.P.R., and is a centre for lumberers, trappers, and sportsmen. Near the town are large deposits of mica. The river forms part of an historic trade route in Upper Ontario. Champlain in 1615 went up the Ottawa and the Mattawa to Lake Nipissing, and his route was generally followed until the advent of the rlys.

**Matte.** Term used in metallurgy to describe one of the intermediate products of smelting an ore containing sulphides. Formation of a matte implies concentrating the valuable part of the ore into a readily fusible and easily handled mass. It depends on the ability of the various sulphides to mix perfectly with iron sulphide. This intimate mixture is heavier than the slags formed, but lighter than the metal, which will therefore settle to the bottom of a furnace, leaving the matte sandwiche. Mattes dissolve gold, silver, and the platinum metals, and so not only collect the base metals, but also concentrate the precious metals away from the gangue (*q.v.*). Copper ores containing sulphides are smelted in a reverberatory furnace to produce matte, which is subsequently blown in a converter to copper sulphide, the iron being removed as slag, and then to blister copper. If much nickel is present the matte may be cast, the nickel sulphide settling to the bottom of the mould, whence it may be separated when cold and smelted separately from the copper concentrate. In the reverberatory smelting of lead, iron or copper sulphides if present form mattes which dissolve lead sulphide. See Smelting.

**Mattei, Tito** (1841-1914). An Italian pianist and composer. Born May 24, 1841, at Campobasso, near Naples, he studied music in Rome. After teaching there, he settled in London in 1863, devoting himself to conducting, piano-playing, and composing. He made tours in Europe and later returned to Italy,

where he was pianist to the king. His works include operas, Maria di Gand among them, ballets, and songs. He died March 30, 1914.

**Matter** (Lat. *materia*). In philosophy, the quality possessed by all sensible things; more particularly, the material or substance of anything as opposed to its form. Aristotle first accentuated this distinction. He regarded matter as formless, undefined, but capable of becoming everything; it is potentiality as contrasted with actuality. Everything that exists in nature is a possibility that has become an actuality. Thus, the seed is the matter, the potential tree; the tree is the form, the seed in actuality. In later philosophy, matter denotes the visible, palpable material existing in space; more definitely, the persistent, imperishable, foundation or substratum of the world, and all that is in it, as opposed to its changeable phenomena. As to its ultimate nature, according to the atomists it consists of the smallest individual elements; according to the dynamists, of simple movable points endowed with force. The relation between mind and matter is another subject of much controversy. (See Aristotle; Kant; Materialism; Mind.)

In physics, three different forms of matter are recognized, the solid, the liquid, and the gaseous. The particular state in which a substance is found is governed by the prevailing conditions of temperature and pressure, e.g. air on sufficient cooling and with a suitable applied pressure becomes a liquid or even a solid. To account for this interchange of state, it becomes necessary to invoke an atomic theory of matter. On this theory a molecule of a substance is the smallest part of it which can have a separate existence, and it is made up of a definite arrangement of the atoms of the elements which form the compound. The degree of mutual attraction between these constituent atoms is greatest in the solid state, is less strong in the liquid state, and is so weak in the gaseous state that a gas always tends to occupy the entire space of the largest container.

Rutherford's experiments showed that the structure of the



Tito Mattei,  
Italian composer  
Histed

atom itself was complex and was to be regarded as consisting of a central core, or nucleus, with an "atmosphere" of revolving electrons, the whole resembling a miniature solar system in which gravitational are superseded by electrical forces. Almost the whole mass of the atom resides in the nucleus, but it is the number of electrons which determine the chemical nature of the atom. (See Atom; Mass, etc.)

In medicine matter is sometimes used as a synonym for pus.

**Matterhorn** (Fr. *Mont Cervin*). Greatest mountain of the Alps. On the frontier of Italy and Switzerland, between Monte Rosa and Mt. Combin, it reaches 14,782 ft., rising abruptly above the range of which it is the sentinel peak. Its glaciers have their upper sources in snows. The Matterhorn was first climbed by Whymper and his party on July 14, 1865; the story of their triumphant ascent and the tragic descent involving four deaths has often been told. The first crossing of the mountain was carried out by J. Tyndall in 1868. Its ascent was later eased by a hut built at a height of 12,526 ft. The N. rock wall was partially climbed in 1934 by the German brothers Schmid, and for the first time completely by a Swiss party in 1946. On the Rosa ridge, 12,000 ft. alt., is a laboratory for studying cosmic rays. See Alps illus., p. 339. Consult also Hours of Exercise in the Alps, J. Tyndall, 1899; The Englishman in the Alps, A. Lunn, 1912; The Matterhorn. G. Rey, new ed. 1947.

**Matthay, Tobias** (1858-1945). British pianoforte teacher. Born of German stock at Clapham, Feb. 19, 1858, he studied at the R.C.M. under Sterndale Bennett and Sullivan, and was appointed professor in 1880, a post he retained until 1925. In 1900 he founded his own pianoforte school. His influence was most important on the interpretative side, and in The Art of Touch, 1903, he described his system. Among his pupils Myra Hess (*q.v.*) was outstanding. Matthay married Jessie Kennedy (d. 1937), sister of Marjory Kennedy Fraser (*q.v.*). He died at Haslemere, Dec. 14, 1945.

**Matthew.** Saint and apostle, also called Levi. A Jewish tax-collector for Herod the tetrarch, he was sitting at the receipt of custom near Capernaum when called by Jesus. The First Gospel traditionally embodies his teaching. He is said to have remained in Jerusalem for 15 years after the

Ascension, and to have suffered martyrdom at the hands of the Ethiopians (Matt. 10; Mark 2 and 3; Luke 5 and 6; Acts 1). His call is commemorated by the Anglican Church on Sept. 21, when the R.C. and Greek Churches celebrate his martyrdom.

**Matthew**, THE GOSPEL ACCORDING TO. Ascribed by tradition to Matthew the Apostle as early as Papias (c. 135), this is a compilation based on two main sources—Mark and the Logia—with some additional material, especially in the opening and closing chapters. It was evidently written for a Jewish audience. The writer never misses an opportunity of introducing an argument from prophecy to prove that Jesus was the Messiah. His quotations are very rarely taken from the Septuagint—a point which proves his acquaintance with the original Hebrew. Jewish customs and practices are often left unexplained, the author assuming that his readers would be familiar with all the national Jewish institutions.

The arrangement and order of the narrative are artificial. The writer groups similar incidents together—giving us chapters of miracles, chapters of parables, and chapters of teaching. There is a strong tradition that the gospel was originally written in Aramaic, but this hypothesis is not now generally accepted. Modern scholars are for the most part inclined to question the theory that Matthew was the author of the gospel as a whole, and to restrict his authorship to the Logia document which was used as its source. Its earliest possible date is 60–70, but many place it ten years later. See Gospels, The Four.

**Matthew of Paris** (d. 1259). English chronicler. He made his confession as a monk at St. Albans, 1217, remaining there for the rest of his life, apart from two visits to Norway about 1248. In his chief chronicle, *Chronica Maiora*, he gives a vivid picture of his times. The *Chronica* is based partly on earlier histories, but its account of the years 1235–59 is the work of Matthew. His *Historia Anglorum* was completed about 1254.

**Matthews**, FRANCIS EDWARD (1862–1929). British chemist. Born in London, Jan. 31, 1862, he was educated at University College, London, and the Royal College of Chemistry, S. Kensington. He early made a reputation in chemical mathematics, and in 1888 joined the Royal India Engineering College as assistant professor. He is best known for his experiments

in synthetic chemistry, and in 1911 published a paper first suggesting the conversion of neoprene into artificial rubber. He experimented in various polymerising actions and their application to synthetic rubber production. He also made some valuable experiments in the production of ribbon metals. Matthews died Feb. 24, 1929.

**Matthews**, JAMES BRANDER (1852–1929). American dramatic critic and dramatist. Born at New Orleans, Feb. 21, 1852, and educated at Columbia university, he was called to the bar in 1873, but adopted literature as a profession. He was professor at Columbia university from 1892 to 1924. His books include *French Dramatists of the 19th Century*, 1882; *Studies of the Stage*, 1894; *Introduction to the Study of American Literature*, 1896; *Molière: His Life and His Works*, 1910; *Shakespeare as a Playwright*, 1913; *A Book about the Theatre*, 1916; *Essays on English*, 1921. Of his plays, suited rather to the study than the stage, the best known is *Margery's Lovers*, 1884. Died March 31, 1929.

**Matthews**, JESSIE (b. 1907). British dancer and singer. Born in London, March 11, 1907, she first appeared on the London stage as a dancer in a revival of *Bluebell in Fairyland*, 1917, and in 1923 played in revue. After understudying Gertrude Lawrence in the U.S.A. she made a notable success in C. B. Cochran's *This Year of Grace*, 1928, and *Wake Up and Dream*, 1929, at the London Pavilion. Another hit was *Ever-Green* (in which she played a dual part), 1930. From 1931 she was seen mainly in films with bright music (including *Ever-Green*), and she played *Susie Dean* in a screen version of *The Good Companions*.

**Matthews**, STANLEY (b. 1913). English footballer. Born at Stoke-on-Trent, he played for the North against the South in the schoolboys' Association football trials in 1927. When 16 he joined Stoke City and played for the club reserve team 22 times in his first season. In 1930 he signed professional forms with Stoke City, and quickly attracted attention as an outside right, being judged one of the finest exponents the game has ever seen. He first played for England when 19, and by May, 1950, had been capped 57 times (including war-time appearances). In 1947 he joined Blackpool.

**Matthews**, WALTER ROBERT (b. 1881). British divine. Born in London, he was educated at Wilson's grammar school, Camberwell, and King's College, London.

Matthews was appointed lecturer in philosophy at King's College in



W. R. Matthews,  
British divine

1908, and in dogmatic theology, 1909; dean of the theological faculty and professor of the philosophy of religion, 1918. He was chaplain to Gray's Inn, 1920, and to the king, 1925. Celebrated as a preacher and lecturer, when dean of Exeter, 1932–34, he was chosen to succeed W. R. Inge as dean of S. Paul's, 1934. He was created K.C.V.O. in 1935. Matthews's published works include *Studies in Christian Philosophy*, 1921; *God and Evolution*, 1926; *Dogma in History and Thought*, 1929; *Seven Words*, 1933; *Our Faith in God*, 1936; *Teaching of Christ*, 1939; *The Foundations of Peace*, 1942; *Strangers and Pilgrims*, 1945.

**Matthias**. Saint and apostle. He was chosen by lot (Acts 1) to fill the place among the disciples left vacant by the death of Judas Iscariot. Tradition identifies him with the publican Zacchaeus. His festival is Feb. 24, a red-letter day in the Church of England calendar.

**Matthias** (1557–1619). Emperor of the Holy Roman Empire. A younger son of Maximilian II, he was born in Vienna, Feb. 24, 1557. Governor of the Netherlands 1578, Austria 1593, and Hungary 1605, he displayed a pacific and tolerant outlook. Recognized heir to the imperial throne, he seized the kingdom of Hungary, also Austria and Moravia, in 1608, and was chosen king of Bohemia in 1611. Becoming emperor next year on the death of his brother Rudolph, he soon withdrew from active government. The Thirty Years' War had just opened when he died childless on March 20, 1619.

**Matthias Corvinus** (1443–90). King of Hungary. Son of John Hunyadi, he was born at Klausenburg (Cluj), March 27, 1443. On the death of his father he was imprisoned in Prague by Ladislas V, but after the latter's death was elected king of Hungary, Jan. 29, 1458.

He undertook a crusade against the Turks, defeated them, cap-



Matthias Corvinus,  
King of Hungary

tured Jassy, and drove the Mahomedans from every part of his realm. In 1468, at the command of Pope Paul II, he declared war on George Podiebrad, king of Bohemia. A long campaign followed, during which Matthias was elected king of Bohemia, but the title was never confirmed by the pope, and did not become effective. Matthias carried on a struggle with the emperor Frederick III, and in 1485 entered Vienna, which he made his capital, the whole of S. Austria as far as the Adriatic falling into his hands. He died at Vienna, April 6, 1490. Matthias founded Budapest university and collected a great library.

**Matthiesen**, AUGUSTUS (1831-70). British chemist. Born in London, Jan. 2, 1831, he became lecturer in chemistry at S. Mary's Hospital, 1868. He made valuable researches into the properties of various alloys, and was the first to isolate calcium and strontium. He committed suicide, Oct. 6, 1870.

**Matting**. Coarse fabric, made of hemp, fibre, straw, grass, and similar materials, for use as a floor covering, or sometimes for packing and kindred purposes. The principal sources of the European supply are India for coconut and plaited straw matting, and China and Japan for the finer and more closely woven varieties. See Coir.

**Matto Grosso** (Port., dense forest). The second largest state in Brazil. Bordering Bolivia and Paraguay, it is partly a plain, and marshy in the S.W. It is traversed by ranges of low mts. and many rivers, and contains a number of lakes. There are large forested areas in which medicinal plants abound; the state is rich in minerals, silver, gold, lead, iron, platinum, salt, and diamonds being found. Coffee, sugar, tobacco, and maté are produced, rubber is exploited, and cattle are reared. The capital is Cuyaba, but Corumbá is the chief commercial centre. Area, 532,210 sq. m. Pop. 427,629.

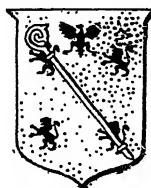
**Maturin**, CHARLES ROBERT (1782-1824). Irish novelist and dramatist. Born in Dublin in 1782, he was educated at Trinity College and entered holy orders. He published his first novel, *The Fatal Revenge*, in 1807 under the pseudonym Dennis Jasper Murphy. It was modelled on Walpole's *Castle of Otranto*, and was followed by other gruesome tales. Melmoth the Wanderer (1820) is considered his masterpiece and was greatly praised by Scott. Balzac published a sequel in 1835 under the

title of *Melmoth Reconcilié à L'Église*. He also wrote plays, of which the most notable, *Bertram*, was produced by Kean at Drury Lane in 1816. Maturin died Oct. 30, 1824. His biography by N. Idman was published in 1924. Consult *Letters to Lady Ewan-Smith*, ed. J. Bramforth, 1927.

**Matz**. River of France, in the dept. of Oise. It is a tributary of the river Oise, starting N.W. of Lassigny and joining that river at Montmacq. See Montdidier.

**Mau**. Two towns of India, in the Uttar union. One lies in the Jhansi dist. and the other in the Azamgarh dist. The first, 117 m. S.W. of Cawnpore, manufactures cloth, and is an important trading centre. Pop. 16,000. The second is 55 m. N. E. of Benares, and manufactures tussore silk. Pop. 30,000.

**Mauberge**. Fortress and town of N.E. France, in the dept. of Nord. It is situated on the Sambre, close to the Belgian frontier.



Mauberge arms

Hardware and metal goods are manufactured. The town was besieged in 1793, but was relieved by the battle of Wattignies. It was the capital of Hainault, but became French in 1678. Stevenson describes the town in *An Inland Voyage*. Pop. 20,859.

Strategically, Mauberge was one of the most important junctions in N. France in the First Great War, five rly. lines meeting there to connect with the French and Belgian coalfields. The fortifications consisted of 15 detached forts, sited 2 to 2½ m. from the town and mounting 435 medium guns. Mauberge was the advanced base of the B.E.F., and after the Allied retreat large numbers of stragglers joined the French garrison of 30,000. The Germans invested it on Aug. 25, 1914, and after a heavy bombardment it surrendered on Sept. 8. The garrison had twice as many troops as the Germans, and the French commander was court-martialled for his conduct of operations, but acquitted. Mauberge was reoccupied by the British on Nov. 9, 1918.

Between the wars Mauberge became one of the points fortified in the expansion towards the W. of the Maginot line, and when the Germans invaded France in May, 1940, it played a vital part in the consequent "battle of the bulge." It formed one end of the salient created in the Allied line, the other end being at Sedan, and fell to enemy storm troops on May 21 after three days of bitter fighting. During the assault the French lost most of the armour concentrated for a general counter-attack against the German advance. Mauberge was liberated during the rapid Allied advance through N. France in Aug.-Sept., 1944.

**Maubin**. Dist. and town of Burma, in the Irawadi division. The dist. comprises an inland portion of the great delta, and has almost the densest pop. in Burma. Rice is the chief article of cultivation. The town is a fishery centre, and is built on low ground less than a foot above high-water mark. Area, 1,648 sq. m. Pop.: dist., 428,092; town, 9,000.

**Mauch, KARL** (1837-75). German traveller. Born at Stetten, Württemberg, May 7, 1837, most of his life was spent in the exploration of Africa. In the course of various journeys he found two extensive goldfields in 1867, and discovered, about 10 m. from Victoria, the remarkable ruins of Zimbabwe, which have been identified by some with Ophir, although it is now agreed that they are of comparatively recent date. He died April 4, 1875. He was the author of *Travels in the Interior of South Africa*, 1872.

**Mauchberg**. Mountain peak of the Drakensberg chain in S.E. Africa. It is in the Transvaal, alt. 8,700 ft. It is situated 15 m. E. of Lydenburg, and is the highest point in the Transvaal.

**Mauchline**. Parish and town of Ayrshire, Scotland. It is 9 m. S.E. of Kilmarnock and has a



Mauchline, Ayrshire. Jolly Beggars hostelry, a famous Burns landmark  
Valentine

riety station. Important cattle and horse markets are held, and fancy articles and snuff boxes are manufactured. Mauchline is the scene of Burns's Jolly Beggars and Holy Fair, and 1 m. to the N. is Moss-giel, the farm at which the poet lived from 1784 to 1788. Pop. 2,484.

**Maud.** Poem by Alfred Tennyson. First published in 1855, it was described by its author as "a little Hamlet, the history of a morbid poetic soul, under the blighting influence of a recklessly speculative age." In varied verse the hero records his love for Maud, his acceptance, and then his duel with her brother. Maud dies and the lover, having passed through madness, goes out to fight in the Crimean War. Though unequal, the poem includes some of its author's best remembered lines.

**Maud** (1869-1938). Queen of Norway. Maud Charlotte Mary Victoria was born Nov. 26, 1869, third daughter and youngest child of Edward VII and Queen Alexandra. On July 22, 1896, she married Prince Charles, son of the then Crown Prince of Denmark.



Maud, Queen of Norway

On Norway's separation from Sweden in 1905, Charles was chosen by popular vote as king of Norway, reigning as Haakon VII, and Princess Maud went with him as his queen. Among more usual accomplishments, she was a talented chess player. Her death occurred in a London hospital, Nov. 20, 1938; her body was taken to Oslo in the British battleship Royal Oak, and laid to rest in the chapel of the castle of Akershus. See Haakon VII.

**Maunder, Aylmer** (1858-1938). British author and translator.

Born at Ipswich, Mar. 28, 1858, he left Christ's Hospital at the age of 16 to attend the Lyceum at Moscow, and a great part of his early life was spent in that city, first as a tutor and later as a business man. He



Aylmer Maunder, British author  
Elliott & Fry

made a close study of Tolstoy, whom he knew intimately and whose works he translated into

English. He also published translations of Turgenev and Dostoevsky, in some of which his wife collaborated with him. In 1897 he helped to arrange the emigration to Canada of the Doukhobors (*q.v.*). His *Life of Tolstoy* in two volumes appeared 1908-1910; he also translated Count Sergius Tolstoy's *The Final Struggle*. He died Aug. 25, 1938.

**Maude, Cyril** (b. 1862). British actor. Born in London, April 24, 1862, he was educated at



Cyril Maude, British actor

Charterhouse, and studied for the stage under Charles Cartwright. He left England owing to ill health, and later appeared on the American stage, making his New York debut, 1884. His first London appearance was in *The Great Divorce Case*, 1886, and after joining Wyndham in 1890 he played in *London Assurance* and *The Second Mrs. Tanqueray*, 1893. He went into partnership with Frederick Harrison at the Haymarket, 1896-1905, and the following year opened the Playhouse (*q.v.*). One of his most famous parts was that of the title-rôle in *Grumpy*, 1914. He also played Peer Gynt in a silent film version of Ibsen's play. Later successes included *Lord Richard* in the *Pantry*, 1919; *Aren't We All?* 1923; *Once a Husband*, 1932. President of the R.A.D.A., 1936, he played *Sir Peter Teazle* in the quarrel scene from *The School for Scandal* at the Haymarket on the occasion of his 80th birthday, and subsequently was heard in a number of broadcast plays. He published his reminiscences in 1927. Maude's first wife was the actress Winifred Emery (*q.v.*).

**Maude, Sir Frederick Stanley** (1864-1917). British soldier. The son of General Sir F. Maude, V.C., a member of an Irish family, he was born June 24, 1864. Educated at Eton and Sandhurst, he joined the Coldstream Guards, 1884, and in 1885 served in the Sudan. Having passed through the staff college, he joined the staff in 1897. He served in S. Africa, where



Sir Stanley Maude, British soldier  
Swaine

he was in the operations of Lord Methuen's force, and afterwards in the Transvaal: there he won the D.S.O. During 1901-04 he was military secretary to the governor-general of Canada, after which he was for a time at the War office. Staff officer at Plymouth, 1906-08, he was assistant-director of the territorial force, 1909-12.

When the First Great War broke out, Maude was on the staff of the 5th division, with which he went to France. In Oct., 1914, he was appointed to command the 14th brigade, but soon returned wounded to England. He took command of the 13th division, with which he went in 1915 to Gallipoli, Egypt, and Mesopotamia. In Gallipoli he shared in the withdrawal from both Suvla and Helles. In Aug., 1916, Maude was selected, after the failure to relieve Kut, for the chief command in that area. He reorganized the forces there, and in Dec., 1916, began his advance. The Turks were driven from Kut, and a successful campaign ended in Maude's entry into Bagdad in March, 1917. After a pause for preparation came another forward move, marked by a victory at Ramadiah and other successes. Again in Bagdad, Maude was struck down suddenly by cholera, and on Nov. 18, 1917, he died. Parliament voted £25,000 to his widow. A man of tact, patience, and skill, Maude ranks by common consent as one of the successful generals of the First Great War. A crucifix erected in the churchyard of S. Paul's, Knightsbridge, was unveiled to his memory in Jan., 1921, and an equestrian statue in Bagdad in 1922. See Mesopotamia, Conquest of. *Consult* Life, Sir C. E. Callwell, 1920.

**Maudit, MONT.** Lofty peak of the Mont Blanc mass, between Mont Blanc and Mont Blanc du Tacul. Its alt. is 14,665 ft. The ascent is made from the Glacier du Géant. See Aiguille du Géant.

**Maudslay, HENRY** (1771-1831). English mechanic. Born at Woolwich, Aug. 22, 1771, he became a blacksmith at Woolwich arsenal, and when 18 was engaged by Joseph Bramah to construct models of his inventions. Later he established his own business as manufacturer of machine-tools. His inventions included the slide-rest, which, with a number of other improvements, revolutionised the lathe, and the first screw-cutting machine. He died Feb. 14, 1831.

**Maufe, EDWARD** (b. 1883). British architect. Born at Bexley Heath, Kent, he was educated at

S. John's College, Oxford, and after the First Great War he became principal architect to the Imperial War Graves commission. Member of the Royal Academy Replanning Committee, he was awarded the Royal Gold Medal for architecture in 1944. His chief works included Guildford cathedral, buildings for Trinity and S. John's colleges, Cambridge, and S. John's college, Oxford; Morley College, London; the "chapel" in Broadcasting House, London; Festival Theatre, Cambridge; and the churches of S. Saviour's, Acton, and S. Thomas's, Hanwell. He was also architect for the reconstruction of Gray's Inn and Middle Temple, London. He was elected R.A. in 1947.

**Maugham, FREDERIC HERBERT MAUGHAM, VISCOUNT (b. 1866).** British lawyer. From Dover College he went up to Trinity Hall, Cambridge, where he was president of the Union and rowed in the university eight, 1888-89. He became a barrister in Lincoln's Inn, 1890, took silk in 1913, and in 1928 was appointed a judge of the high court of justice, in the Chancery division. He was a lord of appeal in ordinary, 1935-38 and 1939-41, receiving a life peerage; from 1938 to 1939 he was lord chancellor. He retired in 1941. He published *The Tichborne Case*, 1936, and several books on Hitler and the Nazis. His brother was Somerset Maugham.

**Maugham, WILLIAM SOMERSET (b. 1874).** British writer. He was born in Paris, Jan. 25, 1874, and educated at King's school, Canterbury, and Heidelberg university. He qualified as a doctor at S. Thomas's hospital, and in his first year of practice wrote *Liza of Lambeth* (1897), the success of which led him to abandon medicine for literature. Many other novels followed, of which the most distinguished were *Of Human Bondage*, 1915; *The Moon and Sixpence* (partially based on the

life of Gauguin), 1919; *Ashenden*, 1928; *Cakes and Ale*, 1930; *Don Fernando*, 1935; *The Razor's Edge*, 1944; *Catalina*, 1948. He also wrote many short stories and books of travel, such as *The Gentleman in the Parlour*, 1930, which reflected his interest in the Far East. Maugham made a considerable name as a dramatist, his witty social comedies, such as *A Man of Honour*, 1903; *Jack Straw*, 1908; *Home and Beauty*, 1919; *The Circle*, 1921; *The Sacred Flame*, 1929, being highly successful. His last play, *Sheppey*, 1933, was a failure, and he announced his intention of writing no more for the theatre.

Maugham was one of the most distinguished writers of his generation, appealing both to the critics and to the larger public. His sense of character was acute and his brilliant wit and narrative ability placed him above almost all novelists of his day. He admittedly owed much to French models (especially, in his short stories, de Maupassant), but everything he wrote bore the mark of his own individuality. In *The Summing-Up*, 1938, he stated his stoical philosophy of life, and explained his own attitude towards literature. *Consult Lives*, R. A. Cordell, 1937; R. H. Ward, 1939.

John Rowland

**Maui.** Polynesian demigod. In the cosmic legends of the Pacific Islands he appears in varying guise, performing exploits which sometimes resemble those familiar in Aryan mythology. Thus, like Hephaestus, he was lame and, like Prometheus, he stole fire for the use of man, either from the sun, from a volcano, or from firesticks cut from trees wherein fire was imprisoned by magical means. In Samoa he became an earthquake god. A Maori legend avers that he fished up the N. island of New Zealand from the ocean floor with a hook made from a jawbone, and elsewhere he is credited with inventing barbed hooks. In Rarotonga he was a son of Tangaroa, whom he supplanted in New Zealand, becoming the supreme sky-god.

**Maui.** One of the Hawaiian Islands. Situated 26 m. N.W. of Hawaii, it comprises two peninsulas joined by a low neck of shifting sand. The E. peninsula rises to Haleakala (10,030 ft.), with a crater 20 m. round and 2,780 ft. deep. The W. peninsula attains 5,788 ft., with plains to the N. and S. There are large plantations of sugar-cane. Lahaina is the chief town. Area, 728 sq. m. Pop. 46,919.

**Maule.** Maritime prov. of Central Chile. It is bounded N. by Talca, E. by Linares and Nuble, and S. by Concepción. Mountainous in the interior, the prov. is drained by the river Maule and its tributaries. The climate is temperate, and agriculture and stock-raising are the main industries. The capital is Cauquenes; the chief port is Constitución, a former capital. Maule city is in the prov. of Talca, 45 m. N.E. of Cauquenes. Area, 2,172 sq. m. Pop. 74,383.

**Maumbury Rings.** Reputed Roman amphitheatre near Dorchester, Dorset. The largest in Britain, measuring 345 ft. by 333 ft., and originally accommodating 12,000 spectators, it was a timbered earthwork upon the site of a neolithic flint quarry, with an arena 196 ft. by 176 ft. The gateway and den for circus beasts have been traced.

**Mauna Kea (White Mountain).** Extinct volcano of Hawaii. It is situated along the N. and N. central portions of the island, and is 13,805 ft. high, the highest peak in the Pacific. Beginning 18,000 ft. below sea level, it has the greatest cubic content of any mt., and discharges the most lava. Its slopes are thickly wooded, and peaks are covered with snow during the greater part of the year.

**Mauna Loa (Great Mountain).** Active volcano of Hawaii. Situated in the central and S. portions of the island, it rises from 15,000 ft. below to 13,760 ft. above sea level, forming with the above Mauna Kea the world's biggest volcano. During periods of activity its lava streams have occasionally extended for 50 m. On its S.E. slopes is Kilauea (q.v.), an enormous active crater.

**Maund, BENJAMIN (1790-1863).** British botanist. Living at Bromsgrove, Worcs, where he kept a stationer's and chemist's shop, he studied botany, and in 1827 was elected a fellow of the Linnean Society, having already produced a periodical, *The Botanic Garden*, in 1825. This, together with other works, was reprinted 1851-54, as *The Botanic Garden and Fruitist*. In 1837 he collaborated with W. Holl in editing the first volume of *The Naturalist*. Maund died April 21, 1863, at Sandown, I.O.W.

**Maundy (Lat. mandatum, commandment).** Name given to the ceremony of washing the feet of the poor on the Thursday before Easter, to the dole then made, and formerly to the Last Supper. The word refers to the words "A new commandment give I unto you,"



Viscount Maugham,  
British lawyer



Somerset Maugham,  
British writer



spoken by Christ at the Last Supper after He had washed the disciples' feet. The custom of foot-washing on Maundy Thursday was originally kept by noblemen and prelates as well as by the pope and R.C. sovereigns. In England the ceremony, which was performed by the sovereign personally until the reign of William III, when it was transferred to the lord high almoner, was abolished in 1754.

In Great Britain the Maundy usage is now confined to gifts of money at Westminster Abbey to as many old men and women as there are years in the sovereign's age, one penny for each year, together with money in lieu of the clothes formerly given. The Maundy pennies, first coined under Charles II, are silver and unmilld, and are legal tender. The Yeomen of the Guard carry the doles, which are distributed by the lord high almoner. The washing ceremony is still observed in several R.C. countries. Maundy Thursday is sometimes called Sheer or Chare Thursday, possibly in allusion to the soul purified by confession, or to the washing of the altars on that day, the word sheer having formerly meant pure.

**Maungdaw.** Village of Burma, on the Arakan coast at the mouth of the river Naff. It is connected by road with Chittagong to the N., Akyab to the S., and, by a series of tunnels through the Mayu hills, with Buthidaung to the E. Evacuated by the British in the spring of 1942 during the Japanese offensive in Burma, it was reoccupied and evacuated twice, before, at the end of the 1944 monsoon, the British, who had gained control of the Maungdaw-Buthidaung road tunnels in June, secured both places by Dec. 19.

**Maunoury, MICHEL JOSEPH** (1847-1923). French soldier. He was born at Maintenon, Dec. 17, 1847, and educated at the École Polytechnique, from which in 1869 he entered the army as a lieutenant of artillery. In 1907 he became director of the École Supérieure de Guerre. A general from 1901, he became a member of the war council in 1910. He had retired from the army, but was recalled by Joffre and placed in command of the 6th army, which suddenly fell upon the left of von Kluck in the first battle of the Marne, Sept., 1914. Maunoury was military governor of Paris, 1915-16, and died March 28, 1923.

**Maupassant, (HENRI RENÉ ALBERT), GUY DE** (1850-93). French writer. Born at the château

of Miromesnil, Normandy, Aug. 5, 1850, he belonged to an aristocratic family, and entered the civil service. He spent much time at the house of Flaubert and there met Daudet, Zola, Turgenev, and other writers. At first he pre-



Guy de Maupassant

ferred field sports to literature, but after seven years' training as a writer under Flaubert, his career began with the publication in 1880 of a volume of poems, *Des Vers*. When the same year his *Boule de Suif* appeared in *Soirées de Medan*, a collection of short stories by many hands, it established his reputation and confirmed Maupassant in his intention of writing stories.

His first full-length novel, *Une Vie*, appeared in 1883. There appeared in rapid succession some of his most characteristic stories: *Clair de Lune*, *Miss Harriet*, *Yvette*, *Contes et Nouvelles*, and *Monsieur Parent*. One of his best-known works, the novel *Bel-amie*, was published in 1885. With *Mont-Oriol* and *Le Horla*, 1887, failing powers and mental hallucinations were evident, though he continued to write such masterly studies as *Pierre et Jean*, 1888; and *Inutile Beauté*, 1890. With the publication of a volume of travels, *La Vie Errante*, 1890, his literary career came to an end.

In spite of robust health and athletic prowess, the inherited mental disorders which led to his brother's death undermined Maupassant's constitution. The "Brittany Bull" found himself entrapped in a Bohemian life which gave him no pleasure, and completed the mischief with drugs and sexual excesses. He died painfully in a private asylum in Paris, July 6, 1893. But in his stories there is a healthy exuberance. He never allowed his rendering of "the humble truth" to be distorted by personal feeling or didactic purpose. His characters are delineated with profound feeling and insight. He remains perhaps the greatest master of the short story.

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**Maupertuis, PIERRE LOUIS MOREAU DE** (1698-1759). French mathematician. Born at St. Malo, July 17, 1698, he served, 1718-23, in the army, where he studied mathematics. He afterwards became a member of the academy of science, of which he was made director in 1742. In 1736 he was given charge of the expedition to Lapland to measure a degree of longitude, and embodied the result of his calculations in *Sur la Figure de la Terre*, 1738. The success of his expedition established his reputation. Settling in Berlin in 1744, he became president of the Prussian academy of science. Having quarrelled with Voltaire, he retired in 1758 to Basel, where he died July 27, 1759. In his *Essai de Philosophie Morale*, 1749, he laid down the theory of pessimism afterwards elaborated by Schopenhauer, Hartmann, and others.

**Maurandia** (*M. barclaiana* and *M. scandens*). Climbing herbs of the family Scrophulariaceae, natives of Mexico. The first named has five-lobed, somewhat ivy-shaped leaves; the second heart-shaped, toothed leaves. Both have tubular violet-purple flowers.

**Maurepas, JEAN FRÉDÉRIC PHÉLIPPEAUX, COMTE DE** (1701-81). French politician. Born at Versailles, July 9,

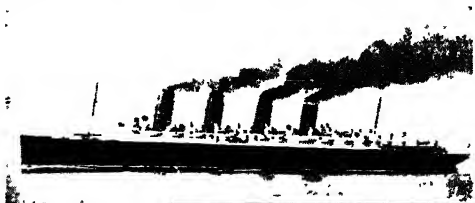


Comte de Maurepas, French politician

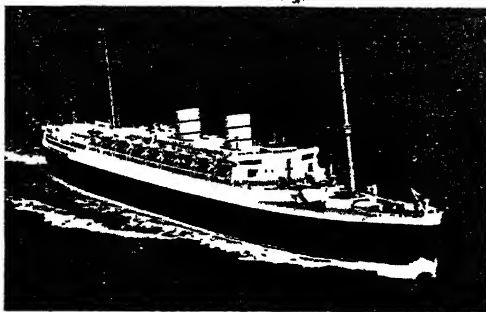
1701, he succeeded his father as secretary for the marine in 1724. His naval administration was progressive but he angered Madame de Pompadour in 1749, was exiled from court, and during the remainder of the reign lived in seclusion. On his accession in 1774 Louis XVI took Maurepas into his inmost counsel, but he was a bad adviser at so critical a period, while owing to his jealousy and ambition first Turgot and then Necker were sacrificed. He died Nov. 21, 1781.

**Mauretania.** Name of two British liners. The earlier launched Sept. 29, 1906, was a sister ship to the *Lusitania* (q.v.) and owned by the Cunard Line. Having a displacement of 31,938 tons and a designed speed of 25 knots, she won the blue ribbon of the Atlantic in 1907, with an average speed of 23.69 knots, a record that stood until broken by the German liner *Bremen* in 1929. This *Mauretania* was broken up in 1935.





The second Mauretania, of 35,677 tons, was launched in 1938 for the Cunard-White Star line. She had a designed speed of 23 knots. Engaged as a troopship during the Second Great War, she rejoined the Atlantic passenger service in 1947. See



Mauretania. Top, first liner of this name, launched in 1906 and broken up in 1935. Below, the second Mauretania, launched in 1938 for the Cunard-White Star line

Launching illus. p. 5009.

**Mauriac, François** (b. 1885). French writer. He was born at Bordeaux, Oct. 11, 1885, and educated at a Jesuit college. In religious poems, *Les Mains Jointes*, 1910, and in a long series of poignant novels (mainly set in the Landes country), he dealt with the struggle between the material and spiritual worlds. His works include *La Chair et le Sang*, 1913; *Le Désert de l'Amour*, 1925; *Thérèse Desqueyroux*, 1926; *Le Noeud des Vipères*, 1932; *Le Mystère Frontenac*, 1933; *Le Fleuve de Feu*, 1938. An Eng. trans. of his *Life of Jesus* appeared 1937. A play, *Asmodée*, trans. as *The Intruder*, was seen in London, 1939. His literary criticism included a life of Racine, 1930. Elected to the Academy 1933, Mauriac had received the grand prix 1926.

**Maurice** (1567-1625). Prince of Orange. The second son of William the Silent, he was born Nov. 13, 1567, and was named after his grandfather, Maurice of Saxony. When his father was murdered in 1584, the people of the Netherlands looked to him as their leader,



Maurice of Nassau, Prince of Orange

and one after another the states made him their stadtholder. It is, however, as a soldier that Maurice is best known. He led the Dutch in their war against the Spaniards,

fell into a quarrel with his former supporter and friend, Barneveldt, and by using his power secured his execution. He died, April 23, 1625, during the renewed war with Spain.

**Maurice** (1521-53). Elector of Saxony. Born at Freiberg, March 21, 1521, he succeeded his father in the dukedom of Saxony in 1541. Although he had become a Lutheran in 1539, his ambition led him to help Charles V against the Protestant league of Schmalkalden,



Maurice, Elector of Saxony

1546, in return for which he gained the emperor's assistance in the war against John Frederick, elector of Saxony. The victory of Mühlberg, 1547, gave him the electorate, but, unfaithful to his imperial ally, he joined the Protestant princes and, in 1552, unexpectedly attacked and routed Charles at Augsburg. Maurice proceeded to Hungary to drive back the Turks, but, hastening back to resist an invasion, he was fatally wounded at the battle of Sievershausen, July 9, 1553, and died two days later.

**Maurice, Sir Frederick Barton** (b. 1871). British soldier. The eldest son of Sir J. F. Maurice (v.i.), he was born Jan. 19, 1871, and entered the army in 1892. He served with the Sherwood Foresters in the Tirah, 1897-98, and in the S. African War. In France from

Aug., 1914, he was chief staff officer of the 3rd div. in the retreat from Mons. In Dec., 1915, he was made director of military operations at the War office. After he had written a letter to the press challenging the accuracy of ministerial statements about disasters in France, he was in 1918 placed on retired pay as major-general. Knighted that year, Maurice was principal of the Working Men's College, St. Pancras, 1922-33, and of Queen Mary College, London university, 1933-44. He was president of the British Legion in 1932. His books include *Forty Days* in 1914, 1919; *Life of Lord Rawlinson*, 1928; *History of the Scots Guards*, 1934; *Life of Lord Haldane*, 2 vols., 1937-38; *Adventures of Edward Wogan*, 1945.

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Sir F. B. Maurice, British soldier Russell

Maurice, Sir John Frederick (1841-1912). British soldier and writer. Born May 24, 1841, a son of John Frederick Denison Maurice (v.i.), he was educated at Addiscombe and Woolwich. Entering the Royal Artillery, he saw service in the Ashanti War, 1873-74; in the Zulu War, 1879; and in the Egyptian War, 1882. He became brevet-colonel in 1885 and major-general in 1895. He was professor of military history at the Staff College, Camberley, 1885-92, and died Jan. 11, 1912. Maurice's reputation is chiefly based on the *History of the War in S. Africa*, 1906-10, which he undertook on the death of G. F. R. Henderson.

**Maurice, John Frederick Denison** (1805-72). British divine and social reformer. The son of a Unitarian minister, he was born near Lowestoft, Aug. 29, 1805, and was educated at Trinity College and Trinity Hall, Cambridge. Having been ordained in 1834, he became curate of Bubbenthal, and in 1837 chaplain of Guy's Hospital, London. He was appointed professor of English literature and history at King's College, London, in 1840, and professor of theology there in 1846.



J. F. D. Maurice, British divine

In 1853, the controversy aroused by Maurice's Theological Essays led to his resignation; and for the next few years he devoted himself to literary work and to the principalship of the Working Men's College, London, of which he was one of the founders, as also of Queen's College for Women. In 1860 he became incumbent of S. Peter's, Vere Street, London; in 1866 professor of moral philosophy at Cambridge; and in 1869 incumbent of S. Edward's, Cambridge. He died April 1, 1872.

Maurice was a colleague of Kingsley in the Christian Socialist movement, an enthusiast for national education, and a friend of all movements for bettering the condition of the poor. Strenuously denouncing party spirit in religion, he stood apart from all parties in the Church, but was bitterly attacked for his alleged heretical teaching on the Atonement and eternal life. His books include *Moral and Metaphysical Philosophy*, 1871-72; *The Claims of the Bible and of Science*, 1863. His *Life* was written by his son, Sir J. F. Maurice (v.s.), 1883-84.

**Maurists.** Reformed congregation of the Benedictine Order named from S. Maurus, a monk associated with S. Benedict. It originated about 1618, when the abbey of S. Maur-sur-Loire was founded near Saumur. A hundred years later there were six provinces in France, including 180 houses, the headquarters being at the abbey of S. Germain-des-Près, Paris. They had the political support of Cardinals de Retz and Richelieu, were famed for their learning, and produced the Benedictine editions of the fathers. The congregation was suppressed in 1792, and the abbey of S. Maur destroyed.

**Mauritania** or **MAURETANIA.** Roman province of North-West Africa. Its area corresponded with that of Morocco and W. Algeria, and it was bounded on the E. by the province of Numidia. The Romans became acquainted with the country during the war with Jugurtha, 106 B.C., and it was formed into a province by the emperor Claudius.

**Mauritania.** French colony in North-West Africa. Bounded N. by the Spanish territory of Rio de Oro and lat. 26° N., S. by the French colony of Senegal, and E. by French Sudan, it was made a protectorate in 1903 and a colony in 1920. Boundaries were revised in 1945. Area, 323,310 sq. m. Mauritania consists principally of

sandy desert, and the inhabitants are nomad Berbers and Arabs, generally termed Moors. The chief products are gum, salt, and cattle, and the Moors possess large flocks of sheep. Pop. 497,000.

**Mauritia.** Genus of palms, natives of tropical America. See *Moriche Palm*.

**Mauritius** or **ÎLE DE FRANCE.** Island in the Indian Ocean, British crown colony. Situated 530 m. E.



Mauritius arms

of Madagascar, and about 2,300 m. N.E. of the Cape, it is 39 m. long and 29 m. broad, and its area is 720 sq. m. Surrounded by coral reefs, it is a rugged, hilly mass of volcanic origin, the chief heights being Black River Peak, 2,711 ft., and Pieter Both, 2,676 ft., with fairly large valleys of great fertility. It has a heavy rainfall, and the hot, moist climate is generally unhealthy. It exports sugar, molasses, rum, aloe fibre, coconut oil, copra, and vanilla. It has no inland navigation, and Port Louis, the capital, has the only good harbour. There are about 120 m. of rlys.

Mauritius was discovered by the Portuguese in 1505; it was then uninhabited, and showed no signs of ever having been peopled. The Portuguese abandoned it, and the Dutch occupied it in 1598, naming it in honour of

Prince Maurice of Orange-Nassau. They left in 1710, and five years later the French began to settle; they renamed it Île de France, and brought great prosperity.

The British conquered the island in 1810, and it was ceded to Great Britain by the treaty of Paris in 1814, the inhabitants being permitted to retain their laws and religion. Renamed Mauritius by the British, and made a crown colony, it has partially representative institutions, and is administered by a

governor, assisted by a legislative council of 35 members—19 elected, 12 nominated, four ex officio.

French is the language still chiefly spoken; English is used in the courts of justice, but both languages are employed in the council of government. The state aids the Protestant and R.C. Churches. Primary education is free, but not entirely compulsory, though literacy is the qualification for the vote. There are an agricultural and a training college, and secondary schools for boys and girls. Pop. est. 424,453, many of Indian descent.

An important link in the sea routes to India and the Far East, Mauritius was covered from attack by the Japanese in the Second Great War by British garrisons in Ceylon and Madagascar. Compulsory service for the home guard was introduced in 1941, but no units were sent overseas. When the shah of Persia was deposed in 1941, he was given refuge here.

In literature Mauritius is famous as the scene of St. Pierre's *Paul et Virginie*, and in ornithology as the one-time home of the dodo. Among the dependencies of the colony, administered by its governor, are Rodriguez Island, the Oil Islands, of which Diego Garcia is the most important, the St. Brandon or Cargados Islands, and the Trois Frères or Eagle Islands, the whole having an area of about 90 sq. m., and a pop. of about 7,000.



Mauritius. Map of the island in the Indian Ocean, a British crown colony since 1814

**Maurois, André** (b. 1885). French writer. Born at Elbeuf, of Jewish parents, his real name was Émile Herzog, and he was educated at Rouen. During the First Great War he served as an interpreter, gaining that insight into the British character which appears in his first successful novel, *Les Silences du Colonel Bramble*, 1918, and its sequel, *Les Discours du Docteur O'Grady*, 1920. A confirmed Anglophile, he produced biographies which dealt brilliantly and intimately as in fiction with central characters: Ariel (Shelley) in 1923; Disraeli, 1927; Byron, 1930; Dickens, 1934. Marshal Lyautey was among his French heroes (biography 1931). In 1938 he was elected to the Academy (see illus. p. 54). Maurois lived in the U.S.A. during the Second Great War, and pub. *The Art of Living*, 1940; and the autobiographical *I Remember, I Remember*, 1942; *Call No Man Happy*, 1943. He also published histories of England (1917), U.S.A. (1944), and France (1949).



André Maurois,  
French writer

**Maurras, Charles** (b. 1868). French writer. Born at Martigues, Bouches-du-Rhône, April 20, 1868, he became a journalist on the staff of *L'Action Française*, which he transformed into a royalist journal, and in 1908, in association with Léon Daudet, into a daily paper. In *Trois Idées Politiques*, 1898, and *L'Avenir de l'Intelligence*, 1905, he advocated restoration of the monarchy and formation of a state that would have been later called fascist. Because of his atheism some of his books were placed on the Index Expurgatorius in 1926, and he suffered imprisonment. He wrote *L'Enquête sur la Monarchie*, 1900-09; *Napoléon avec la France ou contre la France*, 1933; *Dictionnaire Politique et Critique*, 5 vols., 1933-34. An academician from 1938, Maurras was a leading prose writer in historical, political, and literary studies, and produced novels and poetry. He was arrested Sept. 12, 1944, tried as collaborator during the German occupation of France, and condemned Jan. 27, 1945, to solitary confinement for life.

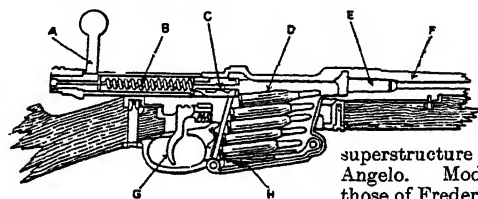
**Maury, Jean Siffrein** (1746-1817). French prelate. Born at Valréas, Vaucluse, June 26, 1746, he was ordained at Avignon. In Paris his eloquence brought him fame, and he gained the royal favour, being presented to the living of Frénade. Elected to the Academy in 1785, he became a clerical deputy to the states-general of 1789, and proved a staunch champion of Church and king. In 1791 he went to Italy, was made bishop of Nicaea, and in 1794 a cardinal. Louis XVIII, then count of Provence, named him ambassador at the papal court, but, making his peace with Napoleon, Maury returned to France in 1806, and in 1810 was nominated archbishop of Paris. The pope declined to ratify his appointment, which was declared null on the Restoration. On repatriation to Rome Maury was imprisoned for six months for contumacy, being released on the sole condition of resigning all his ecclesiastical dignities and preferences. He died May 11, 1817.



J. S. Maury,  
French prelate

**Mauser Rifle.** Rifle used for both military and sporting purposes, invented by Paul Mauser, a German mechanic. The German government equipped their army with the weapon in 1872, and retained it until the end of the Second Great War. It is also the standard infantry weapon of the Belgian, Spanish, Brazilian, and Turkish, and other armies. It has a bolt action with a charger-loaded magazine. The bolt-head is integral with the bolt, and the locking lugs of the latter are at the forward end close to the cartridge, giving a stronger construction than that of the Enfield. The rifling consists of four grooves, twisting to the right. The rifle is extremely durable, very accurate, and has a long life of barrel. It has

a double pull off like the Enfield. See Rifle.



Mauser Rifle. Section showing firing and loading mechanism. A. Bolt head. B. Striker spring. C. Striker. D. Cartridges in magazine. E. Chamber. F. Barrel. G. Trigger. H. Magazine spring.

The Mauser automatic pistol, introduced in 1898, has a clip of 10 rounds in the grip and is made in varying calibres. The .9 mm. model was provided with a wooden holster, which could be attached to form a shoulder-butt, and was sighted up to 1,000 yds. The pistol was adopted as the standard weapon for officers by many Continental and S. American armies, but shortly before and during the Second Great War was largely replaced in the German army by the Luger.

**Mausoleum.** Name applied to a tomb or cenotaph of unusual size and importance. It was first



Mausoleum. Reconstruction of the tomb of Mausolus at Halicarnassus. From model by A. J. Stevenson, British Museum, by permission of the Trustees.

used of the tomb of King Mausolus of Caria, Asia Minor, erected at Halicarnassus, 353 B.C., of which some of the sculptures are in the British Museum. This monument, accounted one of the seven wonders of the world, was 111 ft. in circumference and 140 ft. high, and was crowned by a colossal statue group of Mausolus and his wife, Artemisia, standing in a triumphal chariot. Other classic mausoleums were those of Augustus in the Campus Martius, Rome, which was nearly 300 ft. in diameter, and of Hadrian, Rome, known since the addition of a medieval superstructure as the Castel Sant' Angelo. Modern examples are those of Frederick William III and Queen Louisa of Prussia at Charlottenburg, of Queen Victoria and the prince consort in Windsor Park, and of Napoleon III at Farnborough. See Halicarnassus.

**Mauve.** The first synthetic dye used industrially. It was discovered by W. H. Perkin accidentally, while he was trying to make quinine synthetically, in 1856 (English patent 1,984 of 1856), and manufactured at his factory at Greenford. It was used in making the mauve pigment for printing the penny stamps of Queen Victoria; for calico printing; and for whitening skein silk, a use that survives to some extent. Production and manufacture of mauve mark the foundation of the great synthetic organic chemical industry, which supplies not only dyestuffs but explosives, drugs, and other useful products.

**Mauve, ANTON** (1838-88). Dutch painter. Born at Zaandam, he was a pupil of Pieter Frederik van Os



Anton Mauve,  
Dutch painter

of Haarlem and W. Verschuur. In 1870 he settled at The Hague, removing to Laren in 1885. His pictures mostly represent landscapes with cattle and figures. The National Gallery, London, has a small oil painting, *Watering Horses*, and the National Gallery of Scotland has several examples.

**Maverick.** Term applied in the cattle-raising districts of the U.S.A. to an unbranded animal found straying. It is derived from Samuel Maverick, a Texan rancher who did not brand his cattle, and, when they escaped, claimed every unbranded animal found in the district. Mavericks are either branded by the owner of the ranch on which they are found, or sold for the common benefit of the ranchers in the district. The word is also used to denote anything obtained fraudulently, as a name for a roving person, and, as a verb, in the sense of "to acquire illegally."

**Mavis.** Another name of the song thrush or throistle. Formerly in general use in England, the word is in common use in Scotland, and is still met with in poetry.

**Mavrocordato, ALEXANDER** (1791-1865). Greek statesman. Born at Constantinople, Feb. 11, 1791, a member of a famous Phanariot family, he went at 21 to the court of his maternal uncle, Ioannes Caradja, at Bukarest, and followed that prince into exile. He rendered a supreme service to the cause of Greek independence by seeking to direct to a common



A. Mavrocordato,  
Greek statesman

national aim the many different revolts which broke out in 1820-21 against Turkish rule. A principal author of the Greek constitution proclaimed at Epidaurus, Jan. 1, 1822, he successfully directed the national movement for two years. Although the monarchy established by the great powers in 1832 did not fulfil his hopes for Greece, he served successively as minister in Munich, Berlin, London, Constantinople, and in Paris. Recalled in the crisis of 1853, he succeeded in conciliating the European powers and re-establishing peaceful relations with Turkey. He died at Aegina, Aug. 18, 1865.

**Maver, SIR ALLEN** (1879-1942). British philologist. Born on May 8, 1879, he was educated at Coopers' Company's grammar school, University College, London, and Gonville and Caius College, Cambridge. From 1905 to 1908 he was lecturer in English at Sheffield university, and was Baines professor of English at Liverpool university, 1921-29, returning to University College as provost in 1930. He was director of the survey of English place-names and wrote many books on that subject. He was knighted in 1937, and died on July 22, 1942.

**Mawson, SIR DOUGLAS** (b. 1882). A British explorer. Born at Bradford, Yorkshire, England, May 5, 1882, he went in his youth to Australia, where he graduated at Sydney university in 1901, becoming demonstrator in chemistry the following year. In 1903 he carried out a geological exploration of the New Hebrides, and in 1905 was appointed a lecturer in Adelaide university, becoming professor of geology and mineralogy in 1920. On the scientific staff of Sir Ernest Shackleton's Antarctic expedition of 1908, he helped to locate the S. magnetic pole in Victoria Land, and led the Australasian expedition of 1911-14. He discovered and explored King George V Land and was also leader of the British, Australian, and New Zealand expedi-



Sir Douglas Mawson,  
British explorer

tion of 1929-31. He published in 1915 *The Home of the Blizzard*. Mawson was knighted in 1914. See Antarctic Exploration.

**Max, ADOLPHE** (1869-1939). Belgian administrator. Born in Brussels, Dec. 31, 1869, he became a journalist, and was dramatic critic for the *Petit Bleu*. He also studied law and accountancy, and in Aug., 1909, after some years as councillor and alderman, he was appointed burgomaster of Brussels.



Adolphe Max,  
Belgian administrator

When the Germans approached Brussels on Aug., 1909, he met them and at once began his great battle on behalf of the rights of the Belgian population against the occupying forces. The story is told that the German commander opened an interview by laying his revolver on the desk; whereupon Max placed beside it his only weapon—his fountain-pen. He publicly urged resistance to German demands, and when the fine of £8,000,000 imposed by the Germans on the city of Brussels was not paid he was sent to a prison in Celle, Germany, where he remained until the end of the war. He escaped during the confusion of the German revolution, and on Nov. 17, 1918, was reinstated as burgomaster, holding the post until his death. He was made a minister of state, elected to the chamber of representatives as a Liberal, and received many honours. He died Nov. 6, 1939. Consult Burgomaster Max, A. Vierset and O. E. Millard, 1936.

**Maxentius, MARCUS AURELIUS VALERIUS.** Roman emperor, A.D. 306-312, a son of Maximian, the colleague of Diocletian. His tenure of imperial power, which he had seized with the help of the praetorian guard, came to an end when he was defeated by Constantine at Saxa Rubra, outside Rome, and drowned in the Tiber in his flight, Oct. 27, 312. See Constantine.

**Maxilla.** Large bone in the upper jaw of most vertebrates. On it are borne, in higher forms, the canine teeth, pre-molars, and molars. It is a membrane bone, overlying and not really forming part of the original cartilaginous upper jaw.

**Maxillaria.** Large genus of terrestrial orchids. Of the family Orchidaceae, they are natives of tropical America and the W. Indies.

They have slender, leathery, or fleshy leaves. Many have only small flowers, but *M. grandiflora*, *M. sanderiana*, and *M. venusta*, all with white flowers, are larger and more showy.

**Maxim**, SIR HIRAM STEVENS (1840-1916). An Anglo-American inventor. Born at Sangerville,



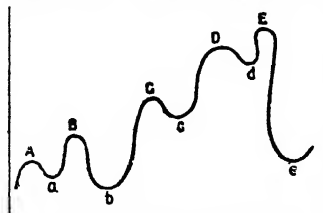
Sir Hiram Maxim,  
Anglo-American  
inventor  
Russell

Maine, Feb. 5, 1840. Maxim served an apprenticeship to a coachbuilder, afterwards working in a machine shop and a ship-building yard. His inventive faculty was developed early, and

demonstrated in improvements in lamps for electric lighting, and in gas-generating plants, steam and vacuum pumps, engine governors, steam pumping engines, etc. His name is best known in connexion with the Maxim gun. He was also interested in aeronautics. In 1872 he made a drawing of a proposed helicopter, and in 1894 built a machine which was tried, not very successfully, at Bisley. Maxim became a naturalised British subject, was knighted in 1901, and died Nov. 24, 1916. See *Machine-Gun*; consult also his autobiography, *My Life*, 1915.

**Maxim**, HUDSON (1853-1927). American inventor. Born at Orneville, Maine, Feb. 3, 1853, he took up the study of chemistry and engineering, and in 1875 suggested an hypothesis on the compound nature of atoms. During 1883-88 he was engaged with a publishing firm, and then began to study explosives and ordnance, being one of the first to make smokeless powder in the U.S.A. His invention was bought by the American government, and in 1901 he invented the explosive maximate. He died May 6, 1927.

**Maxima and Minima**. Term used in mathematics for the certain values that a variable quantity or



Maxima and Minima. Curve showing maxima points, A, B, C, D, E; and minima points, a, b, c, d, e



Maxillaria. Example of *M. sanguinea* of Central America, a cultivated specimen  
E. J. Wallis

magnitude may have. At a maximum the function ceases to increase and begins to decrease. There may be any number of maximum and minimum values of a function, a statement which may be understood by reference to the curve. A B C D E are maximum points, points to which the value of the function is continually increasing, and a b c d e are minimum. It will be seen that a maximum need not be greater than a minimum in actual value. Values at maxima or minima points should be distinguished from the greatest and least value of the function.

**Maxim Gun**. Automatic machine-gun. Hiram Maxim saw the early types of machine-gun, such as the Gatling, Nordenfeldt, and Gardner, and being impressed with the possibilities of obtaining more rapid fire by harnessing the waste force of the explosion, designed the gun which has his name. The weapon was adopted by the British army in 1889. See *Machine-Gun*.

**Maximianus I**, MARCUS AURELIUS VALERIUS (d. 310). Roman emperor, 286-305. A Pannonian of humble origin, he was chosen by Diocletian as colleague, with the western half of the empire as his portion, and when in 293 the empire was divided into four parts, Maximian had charge of Italy and Africa. When Diocletian abdicated in 305 he compelled Maximian to do the same. In 306 the elevation of his son Maxentius to the rank of Augustus induced him to resume the imperial dignity. In 310, having vainly urged his daughter to murder her husband, he was compelled



Maximianus I,  
Roman emperor  
From a medallion

by his son-in-law Constantine to commit suicide. Maximian was a violent persecutor of Christians. See *Diocletian*.

**Maximianus II**. Roman emperor, 305-311, better known as Galerius (*q.v.*).

**Maximilian I** (1459-1519). German king and Roman emperor. Son of the emperor Frederick III, and so a Hapsburg, he was born in Vienna, March 22, 1459. He married in 1477 Mary, daughter and heiress of Charles the Bold, duke of Burgundy, and the death of Charles in the same year threw on him the duty of defending his wife's lands against numerous aggressors, especially the king of France. This took him into the Netherlands, where he gained his first experience of statecraft. In 1486 he was chosen king of the Romans. He recovered Vienna from the Hungarians, 1490, overthrew the Turks at Villach in 1492, and compelled the king of France to cede Artois and the Franche Comté. He became emperor in 1493.

Maximilian's reign of 26 years was full of incident. He warred against the king of France, with-



Maximilian I,  
Holy Roman emperor

out great success, and joined and forsook leagues made by the pope, Henry VII, Ferdinand of Aragon, and other sovereigns. He was continually hampered by lack of means. The Swiss won their independence after a short war in 1499, and no great victories attended his campaigns in Italy. In Germany itself he did something to redress the lack of organization and unity that was the main cause of his military weakness. He set up an imperial court of justice, the Reichskammergericht, and also an aulic council.

The emperor took an interest in military matters, organizing the Landsknechte and improving the fighting forces in other ways. Under him Tirol was added to the family lands, and he arranged the marriages which eventually brought Hungary and Bohemia to the Hapsburgs, and gave a great inheritance to his grandson, Charles V. He was the first to take the title of emperor without being crowned as such by the pope.

Maximilian, a well educated and versatile but restless man, was a writer or inspirer of books, one being an autobiography; also a



dreamer, one theory being that he wished to unite in himself the offices of pope and emperor. He befriended learned men and societies, and from an adventurous strain in his nature has been called the last of the knights. He married a Sforza for his second wife, and died at Wels in Upper Austria, Jan. 12, 1519. He was buried at Innsbruck (*q.v.*). *Consult* Life, I. R. W. Seton-Watson, 1902.

**Maximilian II** (1527-76). German king and Roman emperor. The eldest son of the emperor



Maximilian II,  
Holy Roman emperor  
After Moris

Ferdinand I, he was born in Vienna July 31, 1527. He was educated there, but spent some time in Spain. He began to assist his father and his uncle, Charles V, whose daughter Maria he married, in the business of government about 1548, and in 1549 he was recognized by the Bohemians as their future ruler. In 1562 he was chosen king of the Romans by the German electors, and in 1563 elected king by the Hungarians. Having become emperor and king in 1564, Maximilian carried on a short war with the Turks, and was largely occupied in efforts to compose the religious difficulties resulting from the Reformation. He died Oct. 12, 1576.

**Maximilian** (1867-1929). Prince of Baden and German politician. Born July 10, 1867, a nephew of the

grand duke Frederick I, he entered the Prussian army, and rose to the rank of cavalry general. President of the upper chamber of Baden, he delivered a notable speech on the war, Dec. 14, 1917, but was little known in the politics of Germany until on Oct. 3, 1918, he succeeded Hertling as imperial chancellor. His first action was to appeal to President Wilson, through Switzerland, to initiate peace negotiations, and he conducted the difficult questions relating to the armistice and the abdication of the Kaiser. He remained in office until the republican government was fully established. On Nov. 6, 1929, he died in retirement at Constance.



Maximilian,  
Prince of Baden

**Maximilian** (1832-67). Emperor of Mexico, 1863-67. He was born July 6, 1832, a younger son of the archduke Francis Charles and brother of the emperor Francis Joseph of Austria. In 1857 he married Charlotte, daughter of Leopold I, king of the



Maximilian,  
Emperor of Mexico

Belgians, and in the same year was appointed governor of Lombardo-Venetia. In 1863, when French troops invading Mexico had captured Puebla, they proclaimed, in agreement with the Mexican clerical party, the archduke Maximilian as emperor of Mexico. He accepted the crown, renouncing his rights as an Austrian prince on doing so, and on May 29, 1864, landed at Vera Cruz.

It was but a section of the Mexican people that recognized Maximilian, and he found himself at war with his new subjects from the first. In 1866 he lost the support of the French force on its return to Europe, and in May of the following year he was betrayed to his enemies and on June 19, 1867, was shot at Queretaro. The empress Charlotte (1840-1927) had gone to Europe to enlist aid and, learning of his fate, went out of her mind, but lived until Jan. 19, 1927. Maximilian wrote *Aus Meinem Leben*, 7 vols., 1867. *Consult* Maximilian and Charlotte, Count Corti, 1928; Phantom Crown, B. Harding, 1935; Mexican Empire, M. Hyde, 1945.

**Maximinus**, GAIUS JULIUS VERUS. Roman emperor, 235-38. By birth a Thracian peasant, hence

surnamed Thrax, of gigantic stature and immense strength, he rose to high command in the army. He was proclaimed emperor by the legions of the Rhine, and the murder of Alexander Severus within a month made his way clear to the throne. His elevation to the purple marks a stage in the decline of the empire, for he was the first to obtain supreme power without having held a single administrative post, being simply a creation of the soldiery. Maximinus gained some successes

against the Germans, but soon alienated his subjects by tyranny and cruelty, which caused a revolt in Africa. He was murdered by his own soldiers at Aquileia, June 17, 238. *See* Balbinus: Gordian.

**Maximus**, MAGNUS CLEMENS. Roman emperor, 383-88. Born in Spain, he was proclaimed emperor by the troops in Britain, crossed over to Gaul, and defeated Gratian, his rule beyond the Alps being recognized by both Theodosius and Valentinian II. With the design of making himself master of the entire Western empire, he invaded Italy, 387, but was defeated, taken prisoner, and put to death at Aquileia by order of Theodosius.

**Maximus**, PETRONIUS. Roman emperor in 455. A senator of noble birth, whose wife had been seduced by Valentinian III, he murdered the latter and secured the throne by forcing the widowed empress Eudoxia to marry him. When Eudoxia learnt the truth about her husband's death, she sought the aid of Gaiseric the Vandal, who attacked and plundered Rome. Maximus, while attempting to escape, was cut down by a band of Burgundian mercenaries.

**Maximus Tyrannus** (ex. 422). Roman emperor, 409-11. When Gerontius, general of the usurper Constantinus (*q.v.*), led a revolt against his master in Spain, Maximus was set up as counter-emperor. After the defeat of Gerontius two years later, Maximus, who had been deposed by Constantinus, in 418 started a fresh rebellion in Spain, but was taken prisoner, removed to Ravenna, and there executed.

**Maxixe**. Brazilian dance for two people. With something of the character of the tango (*q.v.*), it reached England through Paris in 1913, but did not attain wide popularity.

**Max Müller**, FRIEDRICH (1823-1900). Anglo-German philologist, Sanskrit scholar, and orientalist.

Only son of the poet Wilhelm Müller, he was born at Dessau, Dec. 6, 1823, and studied at Leipzig, Berlin, and Paris. He came to England with an introduction to Bunsen and a recommendation to the East India Company, who commissioned him to edit the Rigveda. He be-



Gaius Maximinus,  
Roman emperor  
From a medallion



F. Max Müller,  
Anglo-German  
philologist



came professor of modern languages at Oxford, 1854, and of comparative philology, 1866. He died at Oxford, Oct. 28, 1900. His lectures on the Science of Language, 1861-64, simple in style, unlike most German works of the kind, introduced the English public to the latest results of the study of comparative philology and religion. Many of his theories were attacked and are now superseded, but his influence was stimulating at the time. He edited the Sacred Books of the East series, and translated Kant's Critique of Pure Reason. His Autobiography was edited by his son.

**Maxstoke Castle.** Castellated dwelling-house in Warwickshire, England. Situated E. of Birmingham,



Maxstoke Castle. A 14th century dwelling-house, with drawbridge and embattled walls

ham, between Shustoke and Maxstoke, near to Blyth Hall, the home of William Dugdale, the antiquary, it is an interesting example of the style of architecture adopted by powerful English families, when the feudal castle began to give way to the more comfortable dwelling-house. Begun by William de Clinton in 1345, it has a high embattled wall, with octagonal towers at each angle, a gatehouse with towers commanding the drawbridge, and a moat about 40 yds. wide. Near by are the ruins of a 14th century Austinian priory.

**Maxton, JAMES** (1885-1946). Scottish politician. He was born June 22, 1885, and educated in



James Maxton. Scottish politician

Glasgow at Hutcheson's grammar school and the university, becoming a school teacher. An organizer of the Glasgow federation of the Independent Labour party, he opposed the First Great War and was imprisoned for making seditious speeches. He entered parliament in 1922 as I.L.P. member for Bridgeton, and though a fiery advocate of unpopular causes like republicanism and pacifism, gained respect by his sincerity and disinterest in the fruits of office. Maxton was chairman of the I.L.P., 1926-31 and 1934-39, and published a study of Lenin, 1932:

If I Were Dictator, 1936. He died at Largs, July 23, 1946.

**Maxwell.** Unit of magnetic flux. One maxwell per sq. cm. is equivalent to a field of one gauss normal to the area.

**Maxwell, SIR HERBERT EUSTACE** (1845-1937). British author. The son of Sir William Maxwell 6th baronet, of Monreith, he was born in Edinburgh, Jan. 8, 1845, and educated at Eton and Christ Church, Oxford. In 1877 he succeeded to the baronetcy, and was M.P. for Wigtonshire 1880-96, being a lord of the treasury 1886-92. He was elected F.R.S. in 1898, and created a knight of the thistle in 1933. Distinguished in many fields of literature, he excelled as a writer on angling. His

works include Meridiana, 1892. Sixty Years a Queen, 1897; Salmon and Sea Trout, 1898; British Freshwater Fishes, 1904; The Making of Scotland, 1911; Evening Memories, 1932. He edited the Creevey Papers, 1903. He died Oct. 30, 1937.

**Maxwell, SIR RONALD CHARLES** (1852-1924). A British soldier. Born Dec. 26, 1852, he joined the Royal Engineers in 1872 and served in the Afghan and S. African wars. In 1909 he was promoted major-general. Early in the First Great War he went to France as inspector-general of communications, and was Q.M.G. to the British forces in France and Flanders, 1915-17. Created K.C.B. in 1915, he became lieutenant-general in 1916, and died July 20, 1924.

**Maxwell, WILLIAM BABINGTON** (1876-1938). British novelist. Son of John Maxwell publisher, and M. E. Braddon (q.v.), he grew up in a

literary atmosphere, and after editing one of his father's magazines, published in 1901 his first novel, The Countess of Maybury. His stories were notable for skilful characterisation, generally set in credible but exciting situations. The most successful included The Ragged Messenger, 1904; The Guarded Flame, 1906; The Devil's Garden, 1913; The Mirror and the Lamp, 1918. His last works formed a trilogy, Tudor Green, The Emotional Journey, and Everslade, published under the general title Men and Women, 1935-37. His autobiography, Time Gathered, appeared in 1938, and he died Aug. 4.

**Maxwellian Distribution.**

Conception in physics. The molecules of a gas at a definite temperature may be considered to possess a certain average kinetic energy, but in effect the speeds of the various molecules cannot all be equal, for they are repeatedly in collision and this will tend to abolish any attainment of equality. In the steady state at a constant temperature the distribution of velocities assumes a particular function first deduced by Clerk-Maxwell. This function, giving the probability of a molecule having component velocities, in perpendicular directions, of  $u, v, w$ , is given by

$$f(u, v, w) = \frac{(hm)^{3/2}}{\pi} e^{-hm(u^2 + v^2 + w^2)},$$

where  $h$  is Planck's constant and  $m$  is the mass of a gas molecule. Clerk-Maxwell's law indicates that the possibility of a gas molecule having a large kinetic energy falls off exponentially with the value of the kinetic energy.

**Maxwelltown.** Part of the Scottish burgh of Dumfries. Formerly a Kirkcudbrightshire burgh of barony, it has since 1929 been amalgamated with Dumfries, to which it is linked by four bridges



Maxwellton, Dumfriesshire, scene of the ballad, Annie Laurie. See next page

across the Nith. The chief industries are making woollen underwear, hosiery, and gloves, milk processing, and the repair and manufacture of agricultural implements.



Maxwelltown arms

Until 1810 the place was known as Bridgend of Dumfries, but it was then renamed, the district being a stronghold of the Maxwell family. The town is dominated by the museum and a Benedictine convent, both on Corbely Hill. On the outskirts are the fine remains of Lincluden Abbey.

**Maxwellton.** Estate in the parish of Glencairn, S.W. Dumfriesshire, Scotland. It is 3 m. E. of Moniaive, and is the Maxwellton of the ballad, Annie Laurie. See illus. p. 5593; Laurie, Annie.

**May.** Fifth month of the Christian calendar. The Latin name *Maius*, connected with *major*, probably signifies the month of growth. The Romans sacrificed to Maia, an old Italian goddess, on the 1st of the month. They considered May an unlucky month for marriages, because the festival of the Lemuria to the spirits of the unhappy dead was held during the month, and this old notion survives in popular superstition.

**May.** This tree is described under its alternative name of hawthorn.

**May.** Island of Scotland, in the Firth of Forth, forming part of the co. of Fife, 5 m. S.E. of Crail. It has remains of a 12th cent. priory, and at its highest elevation (160 ft.) there is a lighthouse. Area, 2 sq. m.

**May, GEORGE ERNEST MAY, 1st BARON (1871-1946)** British financier. He was born June 20, 1871, and went to Cranleigh school. Employed by the Prudential Assurance co. in 1887, he rose to be its secretary. He was manager of the American dollar securities committee, 1916-18, being knighted in 1918. Chairman of the economy committee in 1931, he issued the May report which advised reductions in unemployment benefit and in the salaries of all state servants; it was accepted by some as a masterly survey, but precipitated a government crisis (see Means Test). In 1932 he presided over the import duties advisory committee. He was raised to the peerage in 1935, and died April 10, 1946; his son, John Lawrence May (b. 1904), succeeded.

**May. EDNA (1878-1948).** Stage name of Edna May Pettie, American actress. Born at Syracuse, N.Y., Sept. 2, 1878, she appeared on the stage as a child in Gilbert and Sullivan operas, and after studying at New York conservatoire, made her reputation in *The Belle of New York*, produced in that city, 1897 and in London 1898. Other musical comedies in which she scored notably were *The School Girl*, *The Catch of the Season*, *The Belle of Mayfair*, and *Nelly Neil*, 1907. She then married Oscar Lewisohn and retired from the stage, reappearing in 1911 for one week of charity performances of *The Belle of New York*. She died at Lausanne, Jan. 2, 1948.

**May, PHIL (1864-1903).** British caricaturist. Born in Leeds, April 22, 1864, he was left in great poverty on his father's death in 1873. In 1878 he was assistant scene painter at the Grand Theatre, Leeds, where he also drew portraits of actors. About 1882 he came to London and drew cartoons for *Society* and *St. Stephen's Review*. He then went to Australia and worked for the *Sydney Bulletin*.

The primitive conditions of printing in vogue there compelled him to develop a style in which everything but absolute essentials

was discarded. His work thus attained a brilliant simplicity of line and vividness of character. Of incomparable originality, it had the appearance of having been achieved by a lucky chance, though each drawing was the result of much labour and many studies. He returned to London about 1890, and worked for the *St. Stephen's Review*, *Pick-me-Up*, *Pall Mall Budget*, *The Graphic*, for which he travelled in America, and *Punch*, on the staff of which



Phil May, British caricaturist Elliott & Fry

paper he succeeded to the place formerly held by George du Maurier. His publications include *The Parson and the Painter*, 1891; *Guttersnipes*, 1896; and *Phil May's Annual* from 1892. He died in London, Aug. 5, 1903. A study by J. Thorpe appeared in 1932.

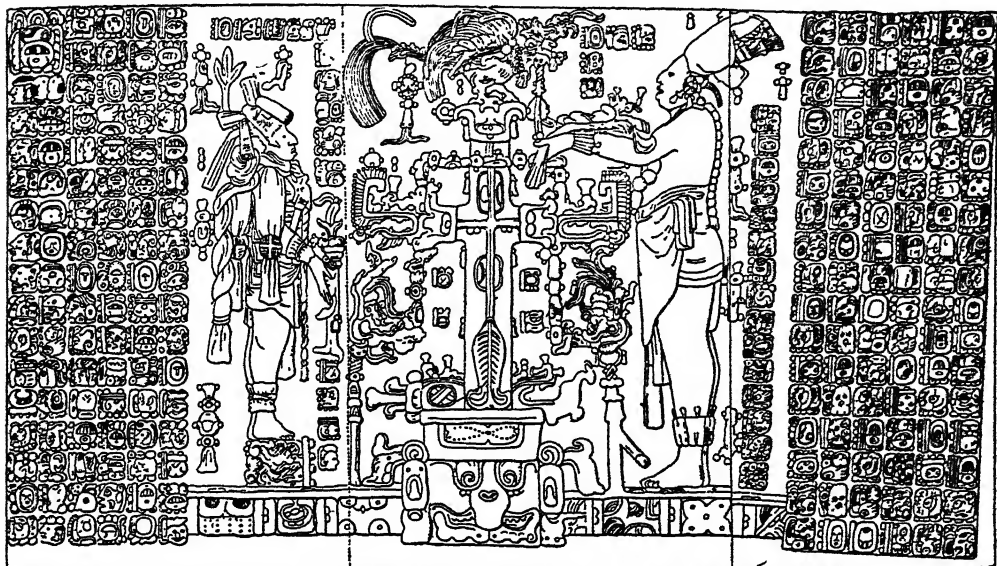
**May, THOMAS ERSKINE.** English historian who was raised to the peerage as Lord Farnborough (q.v.).

**Māya (Sanskrit, matter).** In the Vedānta philosophy, the veil of Nature which obscures the True. Alternatively, the term signifies a charm-weaver who conjures up



Phil May. "The First Smoke," a typical example of this artist's humorous line work

Courtesy of Leadenhall Press, Limited



Maya. Mural tablet, elaborate example of Maya art. The priest, seen on the right, is represented offering the body of a newly born child as a propitiatory sacrifice to the gods, a custom observed on religious festivals, and in order to avert threatened calamities. The tablet was executed with the aid of blunt instruments of flint

visions of the transient glories of this earth in order to captivate *Ātma*, or the soul. According to the Hindu philosophy all are born in *Māya*, the conception of which is akin to the Christian's idea of original sin.

**MAYA OR MAHAMAYA.** Mother of Gautama Buddha. *Suddhodana*, a Kshatriya chief ruling a small state whose capital was *Kapilavastu*, in S. Nepal, wedded two sisters, *Maya* and *Prajapati*, whose father *Grihapati* was a chief of similar rank. The elder sister, when about 45, set out in the second month of spring, c. 560 B.C., for her parents' home in anticipation of childbearing. Midway on the journey she reached a grove sacred to the goddess *Lumbini*, and here *Gautama* was born. The sacred grove was visited c. 250 B.C. by *Asoka*, who erected there an inscribed stone pillar which, in 1895, was identified *in situ* 3 m. N. of *Bhagwanpur*. In after ages, in emulation of Christian history, the Buddhist nativity became encrusted with legendary features. See *Buddha*.

**MAYA.** American Indian stock, comprising about 20 tribes in middle America. In Mexico they number nearly 400,000 including the *Maya* proper, mostly in *Yucatan* and *Campeche*; *Tzendal* and *Tzotzil*, in *Chiapas*; and *Huastec*, in *Vera Cruz* and *San Luis Potosi*. Comprising the bulk of the Indian population in N. Guatemala, they are numerous in Honduras, and

have spread into British Honduras. Thickset and roundish-headed, 5 ft. 1 in. in height, and pale to dark-bronze in skin-colour, they are now mostly agricultural peasants. Although from time to time between 1839 and 1910 they rose in rebellion against the Latin-American administrations, they share in general the unprogressive spirit characteristic of American Indian life.

The modern *Maya* are directly descended from a people who, at the Spanish conquest, had behind them 16 centuries of cultural history of high importance and interest. Their name is associated with an advanced civilization, which reached levels of architectural and sculptural achievement unsurpassed elsewhere in pre-Columbian America. Out of the prolonged archaic period, during which the primitive peoples of middle America were slowly developing maize cultivation and producing crude pottery, there suddenly emerged, c. 200 B.C., a marked cultural impetus. Its stone sculpture and architecture, its conventional pictography, its calendar system corrected by astronomical observations, and its complex religious ritual, were so alien to the general course of aboriginal development, and so reminiscent of the results attained in the Old World after millennium of effort, that the arrival of new cultural influences across the Pacific may be accepted as the most reasonable explanation.

The starting point of *Maya* civilization is still undetermined. The oldest dated monument yet identified in the *Maya* region, found in 1916 at *Uaxactun* in N. Guatemala, approximates to A.D. 50. In the same neighbourhood *Tikal* has yielded the date 214, together with monuments in an earlier style, and *Copan*, in Honduras, traced back to 250 at least, used dressed-stone courses with bonded corners.

From these early civic centres, with temples raised upon terraced pyramidal platforms, which bore very strong suggestions of Asiatic inspiration, the movement spread to *Quirigua* and, through *Piedras Negras*, *Palenque*, and *Yaxchilan*, into *Yucatan*, which was reached early in the 5th century, when the southern cities were at their zenith. By 600 they were already in decay, and were unknown to the early Spanish historians, who left detailed accounts of the great northern cities, notably *Uxmal*, *Chichen Itza*, and *Mayapan*, which was abandoned in 1442. These sources are supplemented by the *Chilan Balam* digests of ancient chronicles in the *Mayan* language, but in Spanish script, and also by three pre-Columbian codices. These illuminated MSS. on agave-fibre paper bear pictures and records in a syllabic script called hieroglyphic, which awaits full deciphering.

After *Maya* art lost its impulse in the primal centres of development its principles spread into S.



Maya. Carved stela, one of many archaeological treasures discovered in 1947 at Bonampak, ancient Maya city in the jungles of Yucatan

Mexico, where it was adopted by the Zapotec people, and onward into the Anahuac tableland. Here it apparently owed its dissemination to the Toltec, from whom it was afterwards absorbed by the Aztec communities. Maya sculpture and handicraft were at all points superior in creative power to the Aztec, towards which it stood in the same organic relationship as Greek to Roman.

In the intellectual domain, Maya mathematics not only reached a system of notation based on 20—instead of our 10—but also used it in a calendar comprising 18 “months,” each of 20 days, followed by five nameless days, devoted to religious rites. There was also a calendar based on the apparent revolution of Venus, and a Quirigua stela records calculations apparently designed to rectify the accumulated errors due to the fact that the true year does not contain an integral number of days. The religious rites, less sanguinary than the Aztec, included sacrificial offerings by professional priests to deities deemed to control the means of subsistence. Designed to ensure rainfall and abundant crops, they were addressed to many deities, at whose head stood the aboriginal tribal god Itzamna, who in the later Yucatan period was displaced by the feathered-snake culture-hero Kukulcan, cognate to the Aztec Quetzalcoatl. *See Art; Mexico: Archaeology; Yucatan.*

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**Mayaguana, OR MARIQUANA.** Island of the Bahamas. It was leased by Great Britain to the U.S.A. in 1940 for use as a naval and air base. Pop. 591.

**Mayáñez.** City of Puerto Rico. The capital of the dept. of Mayáñez, it stands on the river of that name, close to the W. coast. The third largest city of the island, it has a large and secure harbour, is served by rly., and has regular steamship communication with New York. A prosperous commercial centre, it trades extensively in coffee, sugar, and fruit, principally oranges. It has an agricultural experimental station. Founded in 1836, Mayáñez became a city in 1873. Pop. 76,487.

**Máyavaram.** Town of India, in Madras state, in the dist. of Tanjore. It is a rly. junction on the main line from Madras down the coast, with connexions to Karikal and Negapatam. Pop. 29,200.

**Maybole.** Police burgh and market town of Ayrshire, Scotland. It is 9 m. S.S.W. of Ayr, with a rly. station. The chief buildings are the town hall and several churches, and the chief industry the making of footwear.



Maybole arms

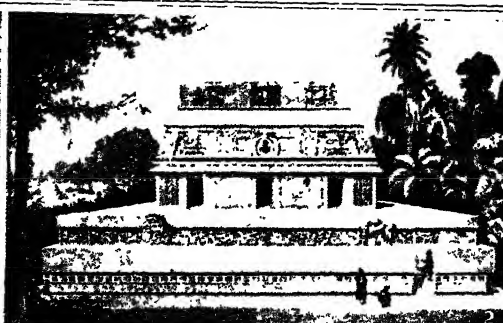
Maybole became important as capital of Carrick. It was incorporated in 1193, and had a castle in which the earls of Carrick lived. Later it passed to the family of Kennedy, now represented by the marquess of Ailsa. In the neighbourhood are Kirkoswald, famous for its associations with Burns, and Culzean Castle. Pop. 5,000.

**Maybrick Case.** Trial of Mrs. Maybrick for the murder of her husband in April, 1889. Kate Maybrick was then 26, her husband being twice her age. Early in 1889 she formed a liaison with a young cotton broker in Liverpool, and shortly afterwards she and her husband had a violent quarrel. Within six weeks of that quarrel Maybrick was dead, and in that time incriminating correspondence had been intercepted between Mrs. Maybrick and her lover. Maybrick's doctor withheld his certificate; an inquest was held, with the result that the widow was charged with the wilful murder of her husband by arsenic poisoning, a charge made more serious by the fact that a short while before her husband's death she had purchased fly-papers containing arsenic.

The accused woman was defended by Lord Russell of Killowen. According to Mrs. Maybrick's own statement, she used the extract of arsenic she made from the fly-papers as a complexion wash, and the chief arguments used in her defence were that her husband was a hypochondriac given to dosing himself with the poison, and in any case it was not certain that arsenic was the direct cause of death. Mrs. Maybrick was reprieved, mainly on the grounds of the conflict of the medical evidence, but despite influential efforts in Great Britain and America she was not released until 1904.

**May Day.** First day of May. The May Day festivities probably originated in the Roman Floralia, the festival in honour of Flora, goddess of flowers. In England flowers and boughs of hawthorn (“may”) were brought from the woods, the prettiest girl in the village was crowned with flowers as queen of the may, and the maypole was set up. May Day was the chimney-sweeps' holiday. On the Celtic May Day festival, called Beltane, fires were kindled on the hill-tops. Of recent years the day has been observed as Labour Day. *See* Beltane; Labour Day; Maypole; Morris Dance.

**Mayen.** Town of W. Germany, in the Land of Rhineland-Palatinate. It is situated 16 m.



1. Temple ruins, Uxmal, Yucatan 2. Restoration of the temple of Kab-ul, Izamal. 3. Bas-relief, now in British Museum, depicting the god Kukulkan, before whom kneels the high priest, offering a blood sacrifice by tearing his tongue with a rope studded with thorns

4. Page from the Maya MS., now at Dresden, an example of early decorative art. The inscriptions have not been deciphered. 5. Western façade of Nunnery Quadrangle at Uxmal, with pyramidal Temple of the Magician on right

**MAYA: REMAINS OF AN EARLY AMERICAN CIVILIZATION**  
No. 5 by courtesy of The American Museum of Natural History



W.S.W. of Coblenz, with which it is connected by rly., being on the edge of the Eifel Mountains and at the mouth of the Nette Valley. The principal building is a Late Gothic church. Mayen originated as a Roman settlement. In the later Middle Ages it rose again, and in the 13th century, or earlier, was a walled town with a castle. There are some remains of both walls and castle. Pop. 14,000.

**Mayence.** French name for the city better known by its German name of Mainz (*q.v.*).

**Mayenne.** River in the N.W. of France. It rises in the dept. of Orne and flows S. across the dept. of Mayenne to join the Sarthe near Angers and form the Maine, which itself soon falls into the Loire. It is navigable for small craft for 75 m., its total length being 125 m.

**Mayenne.** Dept. of France. In the N.W. of the country, the area is 1,986 sq. m. The chief river is the Mayenne; others are its tributaries, including the Jouanne, Colmont, and Oudon. The surface is fairly level, the highest point being under 1,400 ft. high, and the soil is fertile. Cattle, horses, and pigs are reared in large quantities; wheat, oats, barley, and flax are grown, as are apples for cider. A good deal of the land is forest. Laval is the capital; other places are Château Gontier, Mayenne, and Lassay. Before the Revolution the dept. was partly in Maine and partly in Anjou. Pop. 256,317.

**Mayenne.** A town of France. In the dept. of Mayenne, it stands on the river of that name, being on both banks, 19 m. N.N.E. of Laval. It is a rly. junction, and has manufactures of linen and other textiles. The chief building is the church of Notre Dame; dating from the 12th century, it was partly restored in the 19th. Of the castle, around which the town grew, there are some remains, including the chapel and tower. Mayenne dates from about 1100, and the castle was several times besieged and captured during the various civil wars. In 1573 Charles, a son of the duke of Guise, was made duke of Mayenne, the castle and surrounding territory being then in possession of his family. During the Second Great War it was liberated Aug. 6, 1944, by U.S. armour.

**Mayer, JOHANN TOBIAS** (1723-62). German astronomer. Born at Marbach, Württemberg, Feb. 17, 1723, he was a self-taught mathematician and entered a cartographic establishment in Nuremberg in 1746, where he gained a considerable scientific reputation.

In 1751 he was elected to the chair of economy and mathematics at Göttingen, becoming superintendent of the observatory three years later. His fame rests chiefly on his lunar tables, 1752 and 1770, of which an amended form was submitted to the British Admiralty. He died Feb. 20, 1762.

**Mayer, JULIUS ROBERT VON** (1814-78). A German physicist. Born Nov. 25, 1814, in Heilbronn, and educated at the gymnasium there, and at Tübingen, Munich, and Paris, studying medicine, he made a voyage to Java in 1840. There he investigated the phenomenon of animal heat. Taking an interest in science, he practically abandoned medicine, and in 1842



Mayflower. Model of the famous Pilgrim ship of 1620  
By permission of Goulding & Co., Plymouth

published his discovery of the principle underlying the conservation of energy, one of the most important principles in physics. In 1845 he published a fuller account of his discovery, and in 1851 his essay on the mechanical equivalent of heat, which was more accurately stated by Joule (*q.v.*). Mayer died March 20, 1878.

**Mayfair.** District of W. London. Lying to the N. of Piccadilly (*q.v.*), it is covered by once fashionable streets and squares where the aristocracy had their town houses. It derives its name from a fair held during May in the Brook Field, near Chesterfield House. The fair, which originated at the beginning of the 18th century, was suppressed in 1708, revived, and finally done away with in the time of George III. The Tybourne flowed through Brook Field.

What is known as Shepherd's Market, after Edward Shepherd, who built it in 1735, was rebuilt in 1860. Sunderland House is on the site of Mayfair or Curzon Chapel, 1730-1899. Until excommunicated in 1742, the Rev. Alexander Keith ministered here; he then founded another chapel near by at which he

celebrated some 7,000 clandestine marriages. The mews of Mayfair have been turned into garages, and during the Second Great War there was a general evacuation of the district, but though its character is lost, its name remains as a symbol of society. *Consult* Looking Back on London, D. Hood, 1933.

**Mayfield.** A town of Sussex, England, lying 11 m. S. of Tunbridge Wells. It is served by rly. The church is dedicated to St. Dunstan. The archbishop of Canterbury had a palace, of which there are some remains, partly incorporated in a convent built 1866. The banqueting hall became the chapel. Mayfield was a market town in the Middle Ages, and had an iron industry later. Pop. 3,080.

**Mayflower, THE.** Sailing vessel in which the Pilgrim Fathers (*q.v.*) left Plymouth, England, Sept. 6, 1620, and reached the shores of Massachusetts, Dec. 21. A square-rigged brigantine, double-decked, broad in beam, with upper works rising high in the stern, the Mayflower had been used in the whaling service. Christopher Jones was her master and part owner. In her cabin, off Cape Cod, Nov. 2, was signed by the pilgrims the famous agreement, drawn up by William Brewster (*q.v.*). *See* Jordans. *consult* The Pilgrims and Their History, R. G. Usher, 1918; The Last of the Mayflower. J. R. Harris, 1920.

**May Fly.** Popular name for the common English species of ephemera. It appears about the end of May, hence its name, and lives only for a few days, sometimes only a few hours. About 50 species are found in Great Britain, and are in great favour with anglers for bait, especially for trout. *See* Angling: Ephemera; Fly-fishing.

**Mayhem.** In law, the violent deprivation of a person of a member proper for his defence in fight. It is battery, aggravated by the fact that it ever thereafter disables the injured person from making so good a defence against external injury as he otherwise might have done. Members specified as proper for defence included, besides the hands, arms, and legs, the fingers, eyes, and front teeth, but not the nose, ears, or jaw teeth, which are of no use in fighting. The old penalty for mayhem was retaliation—a limb for a limb—afterwards discarded in favour of fine and imprisonment and payment of damages for the civil injury. Mayhem is now included in the Offences against the Person Act of 1861. *See* Battery.



**Mayhew, HENRY** (1812-87). British author. Born in London, Nov. 25, 1812, and educated at Westminster school, he was articled to his father, an attorney, for three years. With Gilbert & Beckett he founded the weekly paper *Figaro* in London, 1831-39.



Henry Mayhew,  
British author

He was joint founder with Mark Lemon and the first editor of *Punch*, and collaborated with his brother Augustus (1826-75) in the production of fairy tales, farces, and popular fiction. His book, *London Labour and the London Poor*, 1851-62, in which he was assisted by John Binny, is almost encyclopedic in scope. He died July 25, 1887.

**Maymyo.** A hill station of Burma. Situated 30 m. by rly. N.E. of Mandalay, in the dry dist. of Central Burma and at an elevation of 3,500 ft., it was formerly the residence of the British governor of Burma. Maymyo was evacuated by Allied troops in May, 1942, during the Japanese offensive in Burma. Gurkhas of the 19th Indian div. recaptured it by surprise on March 13, 1945. Pop. 8,000.

**Maynooth.** Village of co. Kildare, Eire. Situated 15 m. W. of Dublin, with a rly. station, it contains the ruins of a castle, formerly the seat of the Fitzgeralds, while near it is Carton, the seat of the present head of that family, the duke of Leinster.

Maynooth is chiefly famous for its R.C. college, founded by the Irish parliament in 1795. The chief Irish college for the education of priests, it has accommodation for 600 students. The building, by A. W. Pugin, is in the Gothic style. The present chapel, with some elaborate decorations, was added later. Until 1871 the college received an annual state subsidy; it was then granted an endowment of £369,040 from public funds.

**Mayo.** County of Eire. In the prov. of Connacht, it is the third largest in the country, having a land area of 2,084 sq. m. It has a long and irregular coastline on the Atlantic, penetrated by Killala, Blacksod, and Clew Bays, Killary Harbour, and



Mayo arms

Broad Haven. The peninsula of Mullet juts out, and in parts the cliff scenery is wild and magnificent. Achill, Clare, Inishturk, and other islands belong to Mayo. It is drained by the Moy, Owenmore, and other rivers; it contains loughs Mask, Conn, Carra, and Beltra. The surface is fairly level in the E., but mountainous in the W., where are Mulrea, Nephin, and other heights of over 2,500 ft. The soil is poor, but cattle, sheep, and pigs are reared, and oats and potatoes grown. Fishing is an industry. Mayo is served by Eire state rlys. Castlebar is the co. town, other places being Ballina, Newport, and Westport. There are remains of religious houses and round towers. The pop. has fallen dramatically from 388,887 in 1841 to 148,200 in 1946.

**Mayo, RICHARD SOUTHWELL BOURKE, 6TH EARL OF** (1822-72). British statesman. Born in Dublin,



6th Earl of Mayo,  
British statesman

Feb. 21, 1822, he graduated at Trinity College in 1841, travelled in Russia in 1845, and in 1847 became M.P. for co. Kildare. Five years later he became chief secretary for Ireland, holding the post until appointed viceroy of India in 1869. There he introduced financial reforms and much improved the public services, but while calling at the penal settlement of Port Blair, Andaman Is., he was assassinated, Feb. 8, 1872.

**Mayo, KATHERINE** (1867-1940). Irish-American writer and reformer. Born at Ridgeway, Pa., she wrote on police politics, the Y.M.C.A., and the Philippines. But her most famous book was *Mother India*, 1927, the outcome of a visit to India the previous year. Her exposure of the evils of child marriage caused a sensation on both sides of the Atlantic and helped to move the Indian legislative assembly to reformative action. In 1935 she published *The Face of Mother India*. She died Oct. 10th, 1940.

**Mayo Clinic.** American medical and surgical foundation, started at Rochester, Minn., by the brothers Mayo, William James (1861-1939) and Charles Horace (1865-1939). It began with 13 patients but by 1925 the members exceeded 23,000 and the clinic had become world renowned in every branch of surgery. The

brothers founded a graduate school in Minnesota and gave more than £600,000 to establish in Rochester the Mayo Foundation for medical education and research. In the First Great War the Mayos were in joint charge of all U.S. army surgical services.

**Mayo College.** Indian public school at Ajmer, Rajputana. It was founded on the lines of Eton College for the education of Rajput aristocracy and endowed by the states of Rajputana with the addition of government grants. Named after the 6th earl of Mayo (v.s.), a former viceroy, it was opened in 1875.

**Mayor** (Lat. *major*, greater). Name given in England and many English-speaking countries to the chief officer of a municipality. It was first used in the early Middle Ages for a high official of any kind. In England the title appeared about 1100 for the chief official of London, and was soon in fairly general use in the chartered towns. The mayor is elected annually by the town council to preside over its meetings and act as the official head of the town. He is the chief magistrate, and is styled his worship. Many large towns now pay him a salary. The corresponding Scottish official is the provost. In France every town, commune, and district has a maire. See Borough; Burgomaster; Lord Mayor; Provost.

**Mayor of Casterbridge, THE.** Tenth novel by Thomas Hardy. It appeared in 1886, and depicts a group of characters of a county town (Dorchester). Man's conflict against inexorable forces is here shown in the dimensions of man's own experience. The book belongs to the group which includes *Two on a Tower*, 1882, and *The Woodlanders*, 1887.

**Mayotte OR MAYOTTA.** One of the Comoro group of islands in the Mozambique Channel off E. Africa. It has been a French possession since 1851. The island has an area of 140 sq. m. and a pop. of 17,477. Its former industry of sugar planting has now largely given way to the cultivation of vanilla. During the Second Great War British forces occupied Mayotte on July 2, 1942, as a security measure. See Comoro Islands.

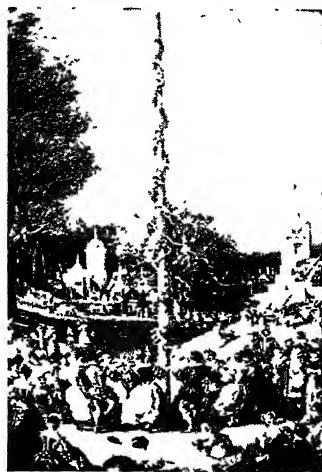
**Mayow, JOHN** (1640-79). British physiologist and chemist. Born in London, May 24, 1640, he was educated at Wadham College, Oxford. He practised medicine at Bath, making a chemical study of the waters there. His tract on Respiration, 1668, ex-

plained the double articulation of the ribs with the spine, and put forward views on the intercostals, developed in *Tractatus Quinque*, 1674. In his treatise *On Saltpetre* and the Nitroserian Spirit, Mayow developed a theory of combustion closely resembling that followed by Lavoisier a century later. He was buried in S. Paul's church, Covent Garden, Oct. 10, 1679. His premature death probably delayed the development of chemistry a hundred years.

**Maypole.** Tall pole formerly set up on village greens, or in the open spaces of towns in England, to form the centre of the festivities associated with the coming of May. It was garlanded with leaves and flowers, and long coloured ribbons attached to the top were held by dancers, who plaited and unplaited them in the course of their evolutions. The custom was assailed by the Puritans of the 16th and 17th centuries as a survival of ancient idolatry. In some places the maypole was a permanent fixture. The London maypole, demolished by the Commonwealth, was replaced at the Restoration by a pole 134 ft. in height. It stood in the Strand near Somerset House, and was removed to Wanstead, Essex in 1717. Maypole dances have been revived in many English centres. According to Sir James Frazer, the maypole and all the rites associated with it are a survival of primitive tree worship. See *Dancing*; *May Day*.

**Mayu.** Name of a river and a range of hills in Burma. The river, some 80 m. long, rises in the Chittagong hills and drains into the Bay of Bengal just N. of Akyab. The hills, which lie close to the Arakan coast, are penetrated by a series of tunnels carrying the road from Maungdaw to Buthidaung, and were the scene of much fighting between British and Japanese, 1942-44.

**Mayurbhanj.** Former state of India, lying between Bengal to the N.E. and Orissa to the S. and S.E. It was merged in Orissa, 1949. Before the changed constitution of 1947 it was in the Eastern states agency. It entered into treaty relations with the East India Co.



Maypole. Some of the eight maypoles at a children's dance festival at Letchworth, Herts. Top picture, dancing round the maypole in Merrie England, after Joseph Nash



Mayweed. White and gold flower-heads

like flower-head is white with a yellow centre, and is about 2 ins. across. Stinking Mayweed (*Anthemiscotula*) has similar flowers. The wild camomile is another common species.

**May Week.** At Cambridge university, the period in which bumping races between college eights, called the Mays, are rowed on the river Cam. Each college normally enters from one to three crews, and the races are held in several divisions. In spite of its name, May Week lasts only four days and occurs in the first half of June. A social occasion, guests being entertained in the evenings by concerts, dances, etc., it corresponds with Eights Week at Oxford. See *Bumping Race*.

**Mazade, FERNAND** (b. 1863). French poet. He was born at the château de Monac, Provence, and though in later life he avoided publicity, he became an influence in contemporary French poetry. A supreme lyricist, he excelled alike in classic and romantic verse, and in his symbolist pieces was influenced by Mallarmé. His works include *Athena*, 1912; *Dionysos et les Nymphes*, 1913; *De Sable et d'Or*, 1921. He also compiled an outstanding anthology of French poetry.

**Mazagan.** Town and seaport of Morocco. It stands on the Atlantic, about 110 miles N. of Marrakesh, for which it is the port. There is accommodation for shipping and a considerable trade passes through here. It has large granaries, and the buildings include a R.C. church. Mazagan owes its origin to the Portuguese, who built it about 1510, and held it until 1770. Pop. 38,000.

**Mazama.** Volcanic cone in the Cascade Range, S. Oregon, U.S.A. Situated in Crater Lake national park, it is reached by road from Medford, 79 m. to the W., on the Shasta rly from Seattle to San Francisco. Once it was a great peak with permanent snow and glacier carved valleys, but the top fell in and the hole is occupied by Crater Lake (q.v.). The rim of the hole rises in a cliff nearly 2,000 ft. at its highest point above lake level at 6,177 ft.

**Mazamet.** Town of France. In the dept. of Tarn, it is situated 40 miles from Albi and 12 m. S.E. of Castres, on a rly. from Certe to

in 1829. Springing from an ancient Bhanja kingdom, it has notable artistic traditions. A hilly area, it culminates in Meghasani, 3,824 ft. Baripada, the only important town, is on a branch line to the coast rly. Area of state, 4,243 sq. m. Pop. 990,977.

**Mayweed** (*Matricaria inodora*). Annual or biennial herb of the family Compositae. It is a native of Europe and N. and W. Asia. The narrow leaves are twice divided into thread-like segments. The daisy

Toulouse. The Arnette flows by it. The chief building is the church of S. Sauveur. The manufactures are mainly cloth and leather, with tanning, dyeing, and other attendant industries. Mazamet was in Languedoc until the Revolution, and was known as a Protestant stronghold. Pop. 15,083.



Mazamet arm:

**Mazanderan.** Province of N. Persia. It lies between the Caspian and the Elburz Mts. with Teheran prov. to the S. It is a fertile region with a marshy, malarious lake shore, producing silk, wool, cotton, rice, sugar, and fruit. It has a caviare industry, and a considerable trade in horses, donkeys, and mules, while there are deposits of iron and petroleum. The capital is Sari, about 20 m. E. of Babal. The area is about 10,000 sq. m. and the pop. about 200,000.

**Mazarin, Jules** (1602-61). French statesman and cardinal. He was born at Piscina, July 14,

Jules Mazarin,  
French statesman

1602, the son of Pietro Mazarini, a Sicilian in the employment of the Colonna family. Having taken minor orders, he entered the papal service, and was sent to France on a diplomatic mission. There he attracted the attention of Richelieu, who took him into the French service, 1639, and dying, named him as his own successor in 1642. On the death of Louis XIII in 1643 Mazarin, who had received the cardinal's hat in 1641, retained the confidence of the regent, Anne of Austria, and continued to be first minister. It has been suggested that he secretly married Anne.

Wily and pliant, a strong contrast to his predecessor, Mazarin continued in his own way Richelieu's policy of concentrating control in the hands of the crown. The Thirty Years War was terminated in 1648. The contest between France and Spain was suspended by the internal struggles of France known as the Fronde (q.v.), in which sundry nobles sought to recover their lost ascendancy. This continued until 1653, ending in the complete triumph of Mazarin. The war with Spain was now renewed. Mazarin

procured the alliance of Cromwell, and secured his triumph in the treaty of the Pyrenees, 1659.

Next year the cardinal retired from the active direction of affairs, and died March 9, 1661.

Greedy and dishonest, he had amassed a fortune while leaving the finances in chaos: but he was a patron of Descartes and Corneille. A consummate judge of men, he was an artist in diplomacy, and unswervingly worked for the aggrandizement of France. Consult his Letters, 9 vols., 1872-74; Life A. Hassall, 1903.

**Mazarin Bible.** Reputed to be the first complete book printed from movable types (1452-56). So named from its having been discovered in the library of Cardinal Mazarin, it is in two volumes and was printed in Latin at Mainz, probably by Gutenberg or Fust.

**Mazar-i-Sherif.** A town of Afghanistan. About 10 m. S.E. of Balkh, near the Dehas-rud or Balkh river, it is the capital of Afghan Turkistan, and contains a famous mosque and the shrine of Hazrat Shah. Swords and other weapons are made. Pop. 30,000

**Mazarron.** Town of Spain, in the prov. of Murcia, formerly known as Almazarron. It is 3 m. from its port (Puerto) on the Mediterranean and 19 m. W. of Cartagena by rly. The neighbouring iron, copper, and lead mines supply its metal works, and it manufactures soap and flour. The port has salt works and a coasting trade. Pop. 18,210.

**Mazatlan.** City and principal Pacific seaport of Mexico. It is in the state of Sinaloa, at the entrance to the Gulf of California. The harbour is merely an exposed roadstead. Foundry products, cotton, and rope are manufactured; minerals, pearls, fish, rubber, and fruit are exported. With a sub-tropical climate, Mazatlan is a popular modern seaside resort. There are good roads to the interior, rlys. to Mexico City and Nogales, U.S.A., and an air service. Pop. 31,000



Mazatlan Mexico. Sea wall and promenade leading to the harbour of this Pacific port

**Maze.** The modern term for a garden labyrinth or puzzle-garden. There is a notable example at Hampton Court, laid out in the time of William III. Mazes were



Maze. Example at Hampton Court, of mixed hedgerow vegetation

common in S.W. England in former times, e.g. at Pimperne, Leigh, and Troy Town, Dorset. The name of Troy Town is derived from the old British word *troi*, a turning or winding. See Labyrinth.

**Mazeppa - Koledinski, Ivan Stepanovitch** (1644-1709). Cossack soldier. Of a noble Polish

Mazeppa-Koledinski,  
Cossack soldier

family, he was educated by the Jesuits, and was beginning a brilliant career at the court of John Casimir, king of Poland, when he was discovered in a liaison with a noble lady. The husband bound him naked to a wild horse, which, it is said, fled with him to the Ukraine. His education and ability gained him a reputation with John Samoilovich, the Cossack hetman, whom he succeeded in 1687.

He won the favour of Peter the Great in the war against the Turks, and was employed in the Swedish War in 1704-05; but in 1708 he deserted Peter and took 7,000 men to the assistance of Charles XII. Peter razed to the ground Baturin, Mazeppa's capital, and the hetman lost the allegiance of his Cossacks. He was present at the battle of Poltava,

1709, after which he went to Turkey, and died, perhaps by suicide, at Bender, Sept. 22. The story of Mazeppa has been treated by Byron, Victor Hugo, Bulgarian, and Gottschalk.

**Mazo**, **JUAN BAUTISTA MARTINEZ DEL** (c. 1610-67). Spanish painter. Born at Madrid, he was a pupil of Velazquez, whose daughter he married in 1634. He remained with his father-in-law until his death, and succeeded him as court painter in 1661, imitating his work with such skill as to be described as a second-hand Velazquez. Many replicas of portraits ascribed to that master are probably the work of del Mazo. He also copied Titian, Tintoretto, and Paul Veronese. Don Tiburcio y Cruzat, in the Prado, is his best work. He occasionally painted hunting scenes, sea pieces, and landscapes, such as his view of the Zaragoza. His portrait of Mariana of Austria (1666) is in the National Gallery, London, where a Portrait of a Man is also attributed to him. He died at Madrid, Feb. 9, 1667.

**Mazovia**. Region of Poland, otherwise known as Masuria (*q.v.*).

**Mazurka** or **MASUREK**. National Polish dance in triple time. Originating in Mazovia, or Masuria, in the 16th century, the dance was adopted in Russia after the subjugation of Poland, and became popular in Germany in the middle of the 18th century, and in France and England later. Characteristics of the early mazurka tunes were the monotony of the bass—usually a reiteration of the keynote—accents on the third beats of many of the bars, and the finishing on the second beat of the final bar. Chopin lifted the music of the simple folk-dance into the region of art and greatly extended its variety, but his mazurkas still emphasise at times these three features, and the 46th mazurka, Op. 68, No. 1, contains all three in its first phrase given below:

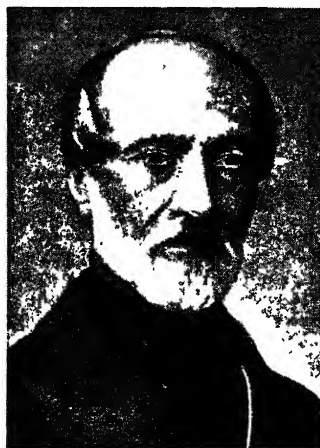


**Mazzarà del Vallo**. City of Sicily, in the prov. of Trapani. The ancient Mazara, it stands on the coast at the mouth of the river Mazaras, 15 m. by rly. S.E. of Marsala. Its cathedral, founded in the 11th century, was rebuilt in the

17th. The castle dates from 1073. In the neighbourhood are sulphur springs, quarries, and grottoes. Originally a colony of Selinus, Mazara was destroyed in 409 B.C., but again became a prosperous town and fell to Rome after the first Punic war. It exports grain, oil, and linseed. Pop. 22,000.

**Mazzeba** (Hebrew, thing-set-up). Semitic unhewn pillar-stone. The A.V. translates pillar and image; the R.V. uses pillar throughout. The earliest record (Gen. 28) is Jacob's Beth-el pillar (house of God), whence the Greeks called such stone symbols baityls. Perhaps originally memorials of the dead, they passed into ritual use, as at Beth-shemesh, Gezer, Petra, sometimes with cup-markings. See Menhir; Pillar-worship.

**Mazzini**, **GIUSEPPE** (1805-72). Italian patriot and author. Born at Genoa, June 22, 1805, he was



Giuseppe Mazzini

educated for the law, but his love of literature and the coterie of young patriots, of whom he soon became the chief, gave his inclinations a more generous turn in the

direction of politics. He joined the Carbonari (*q.v.*) in 1827, and being arrested on suspicion in 1830 was sentenced to exile. Proceeding to Marseilles, he organized a small

band of conspirators, who, in abject poverty and constant danger, spread the doctrines of the secret society, Giovine Italia (Young Italy), already founded by Mazzini.

When, alarmed at his secret politics, the French government

banished him in 1832, Mazzini moved to Geneva, and in 1837 to London, where he made the acquaintance of the Carlyles and gained many friendships of literary and social distinction. Encumbered by poverty, he continued his work of preaching and organizing the cause of Italian unification, stirring the breasts of his fellow countrymen with passionately eloquent appeals to their patriotism. The revolutions of 1848 recalled him to Italy. From Milan he went to Rome, where he launched the republic, of which he became the leading triumvir, 1849. The French crushed the Roman republic and Mazzini fled back to London to spend the next ten years, broken by one or two furtive visits abroad, at his desk and his propaganda. Intensely distrustful of monarchies, whether in the person of Napoleon III or of Victor Emmanuel, he took as his watchword God and The People.

In 1859 came the Franco-Piedmontese War against Austria, and thousands of Young Italy, headed by Garibaldi, joined Victor Emmanuel's army. Once again the cause of Italian freedom was burked by France, and Mazzini, who had hurried out to Florence, threw himself into conspiracies to thwart Austria, liberate Rome, and drive the Bourbons from Naples. But he was a proscribed man, and after Garibaldi's conquest of the Two Sicilies, and delivery of their crown to Victor Emmanuel, Mazzini made his way back to London. Despairing of unifying Italy under the republic he had planned, he remained a constant opponent of the new order of government, and making his home in Lugano, he continued his plots and conspiracies. In the pursuit of one of these he was arrested in 1870, but was soon released and allowed to settle in Lugano. Refusing the amnesty granted him by the king, he paid visits to Italy, and was at Pisa, under the name of Brown, when he died, March 10, 1872.

It is impossible to overestimate the value of Mazzini's writings in the cause of Italian freedom. An idealist and philosopher, he was useless in action, but his writings, in Italian which became classic in his own lifetime, stirred all that was best in a nation plunged in ignorance and oppression. The moving spirit of the Risorgimento, with Garibaldi, Cavour, and Victor Emmanuel he takes his place among the makers of Italian freedom. He was the selfless idealist inspired by, and inspiring in others,

a sublime devotion to liberty and duty; a patriot who, for the sake of a great cause, spent the main part of his life as an exile. His books are many, but *Il Dove dell' Uomo*, 1853 (Eng. trans. *The Duties of Man*, 1862), is the best and most characteristic of his essays. Byron e Goethe, 1847, gave an index to his views on literature. His influence in Europe was mostly through writings in his own journals, *La Giovine Italia*, 1832-36; *L'Italia del Popolo*, 1848-51; *Pensiere ed Azione*, 1859-60; *La Roma del Popolo*, 1870-72.

**Arthur Hayward**

**Bibliography.** *Memoir*, E. A. Venturi, 1875; *Selections*, C. W. Stubbs, 1891; *Lives*, B. King, 1903; A. Rudman, 1922; *Letters*, Eng. trans. A. de R. Jervis, 1930; *Selected Writings*, edited by N. Gangulee, 1945.

**Mead.** Alcoholic beverage made from fermented honey and water. It is often strengthened with brandy and flavoured with hops, currant-juice, etc. Known in classic and medieval times, it was a common drink in both N. and S. Europe. Metheglin, from the Welsh *meddyglyn*, is a medicated mead. Made from exhausted honeycomb, mead is still popular among country folk in many parts of England. Forms of it are made in Russia and Abyssinia.

**Mead, RICHARD** (1673-1754). English physician. Born on Aug. 11, 1673, at Stepney, London, he studied at Utrecht and Leyden and graduated in philosophy and physics at Padua in 1695. His *Mechanical Account of Poisons* was published in 1702 and in the following year he was elected to the Royal Society, contributing a paper on the parasitic nature of scabies. Becoming physician to S. Thomas's hospital in 1703, he was regarded as the head of his profession after the death of John Radcliffe in 1714. He was physician to George II, and died in London, Feb. 16, 1754.

**Meade, ELIZABETH THOMASINA** (d. 1914). British novelist. She was born at Bandon, co. Cork, daughter of the Rev. R. T. Meade, rector of Nohaval. She always wrote as L. T. Meade, even after her marriage in 1879 to Alfred Toulmin-Smith. She began writing stories for young people about 1875 and throughout her life was a most

prolific author, particularly known as a writer of popular stories for girls and novels of a sentimental character. Her output of these was regular from 1886 until her death at Oxford, Oct. 26, 1914.

**Meade, GEORGE GORDON** (1815-72). An American soldier. Born at Cadiz, Spain, Dec. 31, 1815, he graduated from West Point in 1835, and served as an artillery officer against the Seminoles. He resigned in 1836, and took up railway work, but was a staff officer in the Mexican War.

On the outbreak of the Civil War he was appointed a brigadier-general of volunteers; after the second battle of Bull Run he was given a division, and distinguished himself at the battles of South Mountain and Gettysburg. At Fredericksburg (*q.v.*) he directed the attack on Jackson's corps. Promoted major-general, he was given the command of the fifth federal corps. On the eve of the battle of Gettysburg (*q.v.*) he was appointed to succeed Hooker, and defeated Lee, after which he conducted a war of manoeuvre, successfully pressing back the enemy. Grant took over the command in 1864, but retained Meade as his chief subordinate. The latter lacked brilliance, but achieved success by his soundness of judgement. He died at Philadelphia, Nov. 6, 1872. A statue at Gettysburg was erected to his memory. *Consult* Life, J. R. Pennypacker, 1901.

**Meadow.** Strictly, the name for mown land, laid down for grass and cut for hay. Since such land is commonly grazed after the hay crop has been taken, the word has been extended to grass land reserved entirely for grazing. *See* Grass; Ley Farming.

**Meadow Grass** (*Poa*). Genus of grasses of the family Gramineae, more particularly *P. pratensis* and *P. trivialis*. The first is a native of the N. temperate and cold regions; the second of Europe, N. Asia, and N. Africa. They are perennials with creeping rootstocks, which send out runners in the first-named species. They have flat pale-green leaves and pyramidal panicles of flowers. *P. nemoralis* grows in copses and woods, not objecting to the shade of trees.

**Meadow Rue** (*Thalictrum flavum*). Perennial herb of the family Ranunculaceae. A native of Europe and N. Asia, it has a creeping yellow rootstock and furrowed stems 3-4 ft. high. The leaves are divided into numerous three-lobed leaflets. The small

yellow flowers are massed in a large pyramidal cluster. There are no petals and the sepals are small, but the flower-clusters are made attractive by the numerous stamens.

**Meadow Saffron** (*Colchicum autumnale*). Tuberos-rooted perennial of the family Liliaceae.



Meadow Saffron. Pale purple flowers of this field plant; it is also known as autumn crocus

native of Europe. It has pale purple, crocus-like flowers which appear in autumn; the long slender lance-shaped leaves appear in spring. From the dried corms and the seeds is prepared the alkaloid known as colchicine.

**Meadow Sweet** (*Spiraea ulmaria*). Perennial herb of the family Rosaceae. It is a native of



Meadow Sweet. Flowers and buds of the fragrant herb

Europe, N. Asia and Asia Minor. It has a short rootstock, from which arise the handsome leaves about 6 ins. long, broken into toothed leaflets and lobes, white and downy on the underside. The flowers are small, creamy-white, in dense clusters, and very fragrant. The plant delights in wet meadows and water-sides. A popular name for it in some parts of England is queen of the meadows.

**Meadville.** City of Pennsylvania, U.S.A., the co. seat of Crawford co. On French Creek, 120 m. N. of Pittsburgh, it is served by the Erie and other rlys. The buildings of Allegheny college (founded 1815) furnish classical examples of late American Geor-



L. T. Meade, British novelist



gian and Greek Revival architecture; here also is a collection of letters from Thomas Jefferson, James Madison, James Monroe, and John Wesley. Best known industrial products are visual education equipment, rayon, and "zip" (slide) fasteners, mass production of which began in Meadville in 1913, the principle having been patented by a Meadville citizen. Settled in 1788, Meadville was incorporated in 1823, and became a city in 1866. Pop. 16,698.

**Meagher, THOMAS FRANCIS** (1823-67). Irish politician. Born at Waterford, Aug. 3, 1823, he was



T. F. Meagher,  
Irish politician

educated by the Jesuits at Kildare, and then at Stonyhurst. Settling in Dublin he became a violent advocate of repeal, becoming known as Meagher of the Sword for his advocacy of physical force rather than constitutional methods. One of the founders in 1847 of the Irish Confederation, he embarked on a revolutionary campaign, and in 1848 was arrested and convicted of high treason. The death sentence was commuted to penal servitude for life in Tasmania, but in 1852 he escaped to America, and in 1855 was admitted to the bar in New York. He served in the Northern army in the Civil War, and organized and led the Irish Brigade. Temporary governor of Montana, he was accidentally drowned, July 1, 1867.

**Meal.** Word used in two main senses. Originally it meant something ground, hence its present use for the prepared product of oats or maize, the former being oatmeal, while the latter is known in the U.S.A. simply as meal. (See Maize: Oats.) It is also used for the act of taking food in a regular way, breakfast, tea, supper, etc.

**Mealies** (Dutch *milje*, maize). South African name for the cob containing the edible part of maize. It is also applied to the whole plant. See Maize.

**Meal Tub Plot.** Alleged conspiracy by the Presbyterians in 1679 to dethrone Charles II and re-establish the Commonwealth. It had no existence outside the brain of the informer Thomas Dangerfield, who, when charged with imposture, endeavoured to save himself by declaring that the supposed conspiracy was a fabrication of the R.C.s to hide a Popish

plot for the subversion of the state. The whole affair took its name from the meal tub in the house of a Mrs. Cellier in which, according to Dangerfield, the incriminating papers were to be found. Mrs. Cellier and Lady Powys were brought to trial but acquitted, and Dangerfield was killed by a spectator on his way back from the pillory at Tyburn.

**Meal Worm.** Popular name for the larva of a small beetle, *Tenebrio molitor*, which infests granaries and mills. The larva is over an inch long, and is yellow, with darker bands. It is reared as food for cage birds and small reptiles. The beetle is black or brown above and reddish brown below. See Beetle.

**Mean.** In ordinary language, that which occupies a place midway between two extremes. In ethics, the term golden mean is used for that balance between the extremes of excess and deficiency, which constitutes the essence of virtuous action. Thus, truthfulness is the mean between boastfulness and excessive modesty of speech, bravery between fear and excessive self-confidence. In Plato the "mean" of Aristotle appears as moderation, the application of the principle of the finite (limit proportion) to the infinite (desires and passions). In logic, the mean is the middle term of the syllogism.

In mathematics, a mean is a term interpolated between two other terms of a series. If  $a$  and  $b$  are two terms of a series, then their arithmetic mean is  $(a + b)/2$ , their geometric mean is  $\sqrt{ab}$ , and their harmonic mean is  $2ab/(a + b)$ .

In astronomy the word is used in the phrases mean sun, mean moon, mean longitude, etc. In this sense it signifies an imaginary sun, moon, or planet, the movements of which are uniform. e.g. the mean moon is a moon which moves round the earth with uniform velocity in the same time as the actual moon does.

**Meander** (Gr. *Maiandros*, ancient name of a river of Phrygia now called Menderes). Term applied to the swinging curves developed by rivers flowing on nearly level flood-plains, from the nature of the *Maiandros*. Because the velocity of the water is greater on the outside and downstream sides of the curves than on the insides, rivers tend to undercut their concave banks and to deposit material on the insides of curves. This causes meanders to change their shape and position continually, and where parish or county boundaries have been fixed by the

course of a meandering stream such shifts in the channel become of legal or economic importance. If a river breaks through from one meander to the next a complete curve may be cut off, and an oxbow lake (*q.v.*) formed.

Incised meanders are formed when the river having developed a meandering course becomes capable of cutting its bed downwards again. The valley thus formed is steep-sided and gorge-like in cross-section, but its plan is that of the original winding meander pattern.

**Mean Sea Level.** Value derived from a long series of observations made at equal intervals of time. Considerable fluctuations occur in sea level, owing to waves, swell, tides, etc., but the mean value at any place is constant for all practical purposes. The sea at Newlyn, Cornwall, which is exposed to the Atlantic, provides the datum upon which Ordnance Survey maps are based. Previously, the level assumed at Liverpool, about one inch higher than at Newlyn, was the standard. Measurements of height on land are often referred to mean sea level. Barometric pressure is generally reduced to the value which the observer would read if situated at sea level.

**Mean Solar Time.** Method of reckoning the length of a day. The average interval of time is taken from the instant the sun reaches the meridian to the moment when the revolution of the earth brings the sun again into the same position. The time indicated by a sundial, called apparent solar time does not agree with mean solar time, for the length of the actual solar day varies for two reasons: the earth's orbit is elliptical, and the plane of the equator does not coincide with that of the ecliptic.

To obtain a constant measure of time, the apparent solar day is ignored and a purely arbitrary unit has been established. The zero adopted for mean solar time is the instant when a fictitious body known as the mean sun, sometimes in front and sometimes behind the actual sun, is on some chosen meridian. This gives the local solar mean time of any place through which that meridian passes and the time of that meridian is used throughout a whole country (see Greenwich Mean Time). When determined by local observation, mean solar time is true only for places on the same meridian. To overcome variations, which in certain places are as much as a minute for every 10 miles on the earth's surface, most countries



have established time zones, approximately 15° of longitude wide throughout each of which a standard time is observed. *See Time.*

**Means Test.** Term used in Great Britain for the investigation of an applicant's resources before the granting of aid. Such an investigation was part of the Poor Law administration, and was made under the Old Age Pension Act, 1908. The idea of a means test also underlay the National Insurance Act of 1911 and subsequent amendments (up to 1946), the application of which was limited to persons whose income was below a certain figure. A means test is, or has been, applied to those seeking to take legal action as poor persons; to the parents of a single man enlisting in the armed forces if he wants an allowance to be made to them; to patients in hospitals; to parents claiming allowances for children who have won scholarships, etc. The term was used in particular, however, of the test imposed during the 1930s on those among the unemployed whose period of statutory benefit under the National Insurance Acts had come to an end.

The world-wide depression which followed the American slump of 1929 caused unemployment in the U.K. to increase unprecedentedly, until in 1931 the number of registered unemployed men and women rose to over 2½ millions, or more than one in five of insured workers, about half of whom had been unemployed for more than a year; as examples, 55 p.c. of shipbuilding workers, 42 p.c. of cotton workers, 31 p.c. of coalminers, were out of work. An Act of 1927 had removed the limit of 26 weeks' benefit in a benefit year, and reduced the number of contributions necessary for uncovenanted, or transitional, benefit from 30 to eight in the previous two years. But the unemployment fund was running heavily into debt, and in 1930 an Act made transitional benefit a liability of the exchequer instead. Even so, owing to increasing unemployment, contributions to the fund decreased, and during 1930 unemployment expenditure (including transitional benefit of £16,725,000) was double the unemployment fund's income. Acts were therefore passed gradually raising the limit to which the fund might borrow from £80 million to £115 million.

Against this background an economy committee under Sir George May was set up by Ramsay MacDonald's Labour ministry

in 1931. It proposed cuts in govt. expenditure amounting to £96,103,000, of which £66,500,000 was to be the result of reducing unemployment benefits and increasing unemployment insurance contributions. The attempt by the govt. to implement these proposals led to a political crisis, and the formation by MacDonald, Aug. 25, of his first national govt. Snowden, chancellor of the exchequer, in Sept. introduced a budget imposing the cuts, and an order of Oct. reduced rates of unemployment benefit and restored the limit of 26 weeks' benefit in a benefit year, after which an unemployed person could apply for transitional benefit, but to receive it must pass before a public assistance authority a test of need applied not to the personal but to the family income. No rules guided the authorities making the tests, with the result that administration varied. Some authorities ignored savings up to £20, £50, £100, or £200; others insisted that all savings must be spent, and all property sold (as in the worst days of Poor Law administration).

#### How the Test Worked

Of 571,000 claimants between April 2 and Sept. 3, 1932, 180,000 were allowed less than the full rate, 107,000 were allowed nothing. Serious rioting occurred in Birkenhead on Sept. 17, 1932; Durham and Rotherham public assistance committees refused to administer the test, and other authorities did so under protest; hunger marchers from all parts of the country converged on London. In Nov. the Transitional Payments (Determination of Need) Act, commonly called the Means Test Act, decreed that in estimating needs, one-half a wound or disability pension, one-half workmen's compensation payments, any sum a claimant might be able to obtain by selling or mortgaging his house, and the first £25 of capital were to be disregarded. Each £25 of capital beyond the first up to £300 was to be treated as worth 1s. a week.

Full rates of unemployment benefit were restored in the 1934 budget, but the means test remained on the statute book until the passing of the National Insurance Act of 1946. Although the main part of this Act became operative only on July 1, 1948, a regulation made by the minister of national insurance brought into effect from Feb. 10, 1947, that section dealing with extended payments of unemployed benefit.

Irene Clephane

**Mearns.** Alternative name for the Scottish county of Kincardine. A district therein, a continuation of the valley of Strathmore, is known as the Howe or hollow of the Mearns. The name is supposed to be that of an early king. *See Kincardineshire.*

**Measles.** An acute contagious disease caused by a filter-passing virus. The disease is most frequent in childhood. The period of incubation, i.e. the interval from actual infection to the commencement of symptoms, is 7 to 18 days, most often 14 days. During incubation the patient is not contagious; a school may keep open several days after an outbreak. Infection is a "droplet" infection, communicated directly by the breath or nasal secretion.

The disease usually starts apparently as a feverish cold, with sneezing and running at the nose, coughing, and redness of the eyes. Headache, nausea, and vomiting may be the first symptoms. There may be a blotchy redness about the skin, and, generally on the fourth day, little red spots resembling flea bites appear on the face. The skin of the chest and abdomen exhibits a mottled, blotchy appearance. Improvement in the general symptoms usually begins about the fifth or sixth day. An early diagnostic symptom is the presence of whitish spots, surrounded by a red area, on the insides of the cheek. These are called Koplik's spots, after the observer who first described them. After the rash has faded, the superficial layer of the skin flakes off in fine scales (desquamation).

Common complications of measles are laryngitis, bronchitis, and broncho-pneumonia. More rarely, Bright's disease, endocarditis, inflammation of the middle ear, and other complications occur. These are due to secondary invading germs and usually respond to sera, penicillin, and the sulpha drugs. Treatment consists in keeping the patient in bed in a warm, well ventilated room, and in good nursing. Particular care should be taken during convalescence, as at this stage the complications of bronchitis and broncho-pneumonia arise.

Malignant or black measles is a severe form, occasionally seen, in which bleeding from the skin leading from the mucous membranes, or into the skin, may occur.

Measles is responsible for a considerable mortality. The disease varies in severity with climate, in different generations, with the strength of the virus, and with the

resistance of the victim. Serum from a convalescent patient, if injected within a few days of contagion, may ward off the disease or allow only a mild attack to develop. Peoples who have no inbred resistance often suffer very severely if an epidemic occurs. One attack of true measles protects the patient for life.

**Measure** (Lat. *mensura*, measure). Word used in a number of senses. Instruments for determining the lengths of objects, vessels of known capacity, etc., are called measures, e.g. yard measure, tape measure, etc. A system of measurement is also called a measure, as board measure, long measure, etc. (See Surveying.)

In dancing, the word is used to indicate regulated movement, which corresponds to the time in which the accompanying music is performed. In poetry, the word is used to indicate the arrangement of the syllables, e.g. iambic measure.

In arithmetic, greatest common measure is the greatest number which is contained without remainder in two or more numbers; in printing, the measure of a column or page is its width; and in geology, beds or strata are called measures, e.g. coral measures.

In fencing, the word is used for the limit of distance at which one opponent can reach the other by lunging. In architecture, a measure-and-a-half door is one which has moulding on one side only. See Weights and Measures.

**Measure.** Term in music. (1) A dance-tune, especially of a stately type. The term is much used by poets from the 16th century onwards, but no specific dance has been identified with it. (2) The space between two bar-lines. See Bar; Tonic Sol-fa.

**Measure for Measure.** Tragicomedy by Shakespeare. Angelo, an ascetic, made deputy for Vincentio, duke of Vienna, revises certain laws against immorality, and has Claudio condemned to death for an offence against them. He refuses the plea for mercy made by Isabella, Claudio's sister, save on the condition that she shall become his mistress. When he thinks she has consented, he orders Claudio to immediate execution. The duke returning, disguised as a friar, rescues Isabella by persuading Mariana, whom Angelo has jilted, to take Isabella's place at the assignation with him; saves Claudio by inducing the provost of the prison to postpone his execution; and having listened in his

real character of duke to the denunciation of Angelo by Isabella, takes her for his wife, and pardoning Angelo, compels him to marry Mariana. None of the characters is wholly likeable, and the play is interesting rather for its arguments on mercy and justice, and two speeches, that by the duke beginning "Be absolute for death," and Claudio's "Ay, but to die, and go we know not where." The scene of the play is laid in Vienna.

Written 1603-04, Measure for Measure was first published in the 1623 folio. It is a remodelling and refining by Shakespeare of a story in Giraldi Cinthio's Hecatommiti, 1565, which in turn inspired Whetstone's play of Promos and Cassandra, 1578, a prose version of which is in his Heptameron of Civil Discourses, 1582. The play contains 2,809 lines (1,134 prose, 1,574 blank verse, and 73 pentametric rhymes). Angelo has been played notably in modern times by Oscar Asche, Charles Laughton, and John Gielgud; Isabella by Lily Brayton and Flora Robson.

**Meat** (A.S. *mete*). Food obtained from many classes of animals. These include mammals, such as cattle, sheep, swine; birds; and in the broad sense also fish, amphibians, molluscs, and crustaceans. In general application meat is the flesh of animals used for food, including their edible organs and glands. The flesh of the carcass is the skeletal muscles, which are voluntary or striated, whereas in organs of the digestive tract, the type commonly found is smooth or non-striated. Heart muscle is of special form, striated and involuntary. As forming part of muscle, the fat, ligaments, tendons, blood vessels, and nerves can be termed meat.

Degree of fatness has profound influence on the value of meat. More fat means a higher calorific value, but less protein and water. The amount of bone normally expected in a beef carcass is 13-20 p.c.; in lamb, 15-18 p.c.; in pork, 14-16 p.c.; and in a side of bacon, 11-13 p.c. Representative analyses of the edible portion of carcasses give this table:

	Water p.c.	Protein p.c.	Fat p.c.	Calories per 100 gms.
Beef (lean)	65	16	18	226
" (average)	56	15	28	312
" (fat)	48	13	38	394
Lamb	55	13	31	331
Pork	47	12	40	408

Animal proteins contain the ten essential amino-acids and are

therefore of high biological value and termed first-class protein, though gelatine, from the collagen fibres, lacks at least one of the essential amino-acids (tryptophane). Fats, formerly valued chiefly as a source of energy, may act as carriers for vitamins. Meat is deficient in calcium, but a good source of phosphorus and iron, liver and kidney being particularly rich in both. Meat generally is unimportant as a source of vitamin A, though liver is an excellent source. The vitamin B complex, aneurin, nicotinic acid, and riboflavin, is found in meat, but the substances are affected by heat and lost by dissolving in water, especially aneurin. Meat has a high satiety value, for its fat content tends to retard digestion in the stomach. Beef and mutton pass through it in about 3 hours, pork in 3½ hours. The pre-1939 annual consumption of meat in Great Britain was 140 lb. a head.

Frank Gerrard, M.Inst.M.

**Meat Extracts.** Palatable extracts of meat are made by digesting chopped meat in boiling water, removing the fat, and concentrating the liquor. About 10 lb. of meat yields 1 lb. of extract which contains meat bases, amino-acids, gelatine, lactic acid, proteoses, peptones, and inorganic salts. Large quantities are obtained as a by-product in the corned beef industry. Meat extracts have a stimulant action on the gastric mucosa, improving appetite.

**Meath.** County of Eire. In the prov. of Leinster, it has an area of 903 sq. m. and a coastline of about 10 m. on the Irish Sea. It is largely a level area, although there are hills in the west. The chief rivers are the Boyne and its tributary, the Blackwater. The soil is fairly fertile. Oats and potatoes are grown; cattle, sheep, and pigs are reared. Meath is served by Eire state rlys. Trim is the county town; other places are Navan, Kells, Oldcastle, and Athboy. Meath was the name of one of the kingdoms of Ireland, including Meath, Westmeath, Longford, and parts of other counties. The kings disappeared in the 12th century, but not until the 16th century was the province, as it was called, divided into counties as at present. There are many ecclesiastical remains, those at Duleek, Bective, and Clonard being of interest, while in

Meath are Tara and New Grange, with its burial mounds. There are R.C. and Protestant dioceses. Meath and Westmeath join to send five members to the Dáil. Pop. 65,298.

**Meath, EARL OF.** Irish title borne since 1627 by the family of Brabazon. In 1616 Sir Edward Brabazon, an Irish M.P., was made an Irish peer as Lord Ardee, and his son William, the 2nd baron, was made an earl. His descendants succeeded until the earldom came to John, 10th earl, who in 1831 was made a peer of the U.K. as Baron Chaworth. Reginald (1841-1929), who became 12th earl in 1887, was known as a promoter of



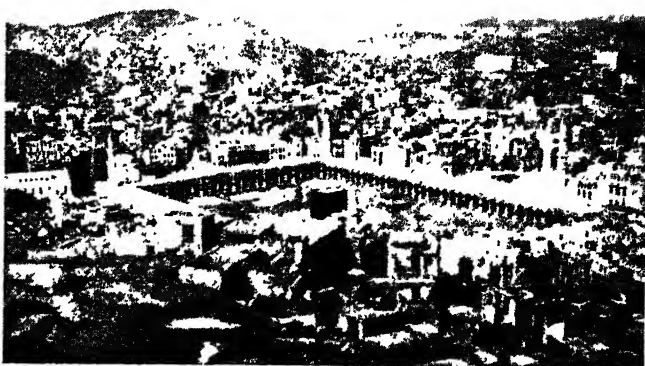
12th Earl of Meath, Irish philanthropist

Empire Day and as a philanthropist. The 13th earl was his son, also Reginald (1869-1949), a brig.-gen. from 1918. The 14th earl, Anthony (b. 1910), was his son. Lord Ardee is the title of an eldest son. The earl's estates are mainly in co. Wicklow.

**Meaux.** Town of N.E. France, in the dept. of Seine-et-Marne. It is situated at a hairpin bend of the Marne, 25 m. N.E. of Paris. The handsome cathedral of S. Etienne contains the remains of Bossuet, its most noted bishop (1681-1704). There is a large trade in grain and dairy produce, and sugar, flour, textiles, and steel are manufactured. Meaux was besieged by the



Meaux, France. West front of the cathedral, which was begun in the 12th century



Mecca, Arabia. Holy city of Islam, and since June, 1916, capital of the new kingdom of the Hejaz. The sacred Ka'aba is seen in the centre of the great mosque

English in 1520. It marks the nearest approach of the Germans to Paris in their opening offensive, Sept., 1914. It was held by the Germans in the Second Great War from June, 1940, until U.S. troops crossed the Marne here Aug. 28, 1944, in the rapid Allied advance through N.E. France. Pop. 14,223.

**Mecca, MAKKAH, OR BAKKAH.** City of Arabia, the ancient Macoraba, and now one of the capitals of Saudi Arabia. It lies about 45 m. E. of Jeddah, its port. As the birthplace of Mahomet, it is the chief Holy City of the Muslim world. It lies in a narrow valley, surrounded with hills, and as many of its houses are of stone it has a well-built appearance. Roads and the supply of water and electricity are being developed by Egyptians. The centre of interest is El Haram, the great mosque which has within it the sacred Ka'aba, surrounded by a vast court said to be capable of holding 30,000 worshippers. The pop. is about 200,000, but much more in time of pilgrimage.

At one time Mecca was an important emporium of trade, but latterly its main commercial enterprise has been supplying the pilgrims with souvenirs. Although all non-Muslims are strictly forbidden to enter the Holy City, it has been visited by several Christian observers, such as Sir R. Burton, who gave an account of it in his *Personal Narrative of a Pilgrimage to El Medinah and Meccah*, 1855.

In the First Great War Hussein Ibn Ali, the grand sherif, revolted against the Turks, and captured Mecca from them in 1916. In 1924 the city fell to the Wahabis as the result of the victory of the sultan of Nejd over King Hussein. In 1925 King Ali, who had acceded on his father Hussein's abdication,

surrendered to Ibn Saud, the Wahabi sultan, and in 1926, the latter proclaimed himself king in Mecca. See *Arafat*; *Hejaz*; *Holy Carpet*; *Ka'aba*; *Mahomedanism*; *Mahomet*.

**Mechanical Engineers, INSTITUTION OF.** A British scientific society. Founded in 1847 at Birmingham by George Stephenson, it removed to London in 1877 and was registered under the Companies Act, 1878. The society holds regular meetings for the purpose of reading papers on engineering. The address is Storey's Gate, St. James's Park, London, S.W.

**Mechanics.** That branch of science which treats of forces and motion. It is usually divided into two parts: statics, which deals with the action of forces on bodies at rest, and dynamics, which is concerned with the action of forces on bodies in motion. The whole science rests on the three laws of motion formulated by Newton: (a) a body will remain at rest or in a given state of motion until it is acted upon by an external force; (b) the acceleration of a body takes place in the direction of the force which produces it and is directly proportional to the magnitude of the force and inversely proportional to the mass of the body; (c) every action is accompanied by an equal and opposite reaction. These laws cannot be proved by experiment, but every conclusion based on them has been found to be in accord with experience when they are applied to any finite material system.

The first law defines a property of matter known as its inertia, which is proportional to its mass. Mass is the quantity of matter in a body and the standard units of mass are the pound and the kilogramme, which are certain pieces

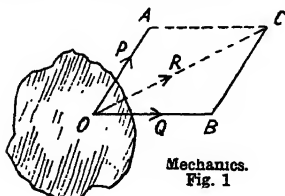
of metal preserved in London and in Paris respectively. The second law defines force in terms of its ability to overcome inertia. It is expressed mathematically by the relationship:  $F = M \times a$ , where  $F$  is the magnitude of the force,  $M$  is the mass of the body on which the force acts, and  $a$  is the rate of change in the velocity of the body, or its acceleration. Putting  $M = 1$  and  $a = 1$ , the unit force is thus defined as the force required to produce unit acceleration in unit mass.

In the C.G.S. (centimetre, gramme, second) systems the fundamental or absolute unit of force is the dyne. The magnitude of this unit can be deduced from the fact that a body falls near the earth's surface with an acceleration of 981 cm. per sec. per sec. The force of gravity on unit mass is the weight of 1 gm., therefore 981 dynes will balance a weight of 1 gm. It must be remembered, however, that a given mass will have different weights, according to its distance from the centre of the earth, whereas the absolute unit of force has the same value throughout the universe.

In the English or foot-pound-second (F.P.S.) system the absolute unit of force is the poundal. The magnitude of this force can be deduced from the fact that a body falling freely under gravity near the earth's surface has an acceleration of 32.2 ft. per sec. per sec., and since the force per unit mass is then a pound weight 32.2 poundals will balance the weight of 1 lb.

A force is completely specified by its magnitude, direction, and point of application. A force is thus a vector quantity which can be represented graphically by a line of finite length with an arrowhead to indicate the direction in which it is acting.

**COMPOUNDING AND RESOLUTION OF FORCES.** If any two concurrent forces  $P$  and  $Q$  (Fig. 1),



acting at the point O are represented in magnitude and direction by the adjacent sides OA and OB of the parallelogram OACB, their resultant R is represented by the diagonal OC, and the force R will

therefore have the same effect as the forces P and Q combined. Conversely, if R is a single force acting on the body at the point O, it can be resolved into any two component forces such as P and Q. Any number of concurrent and coplanar forces can be compounded into a single resultant force, and if the latter is zero the forces are in equilibrium among themselves. The principle of the parallelogram of forces enables the engineer to apply graphical methods to analyse stresses and to determine the stability of structures under the action of any number of forces provided that the problem is determinate. If R in Fig. 1 is reversed, then P, Q, and R acting together are in equilibrium; therefore it follows that if three concurrent forces are in equilibrium they can be represented by the three sides of a triangle taken in order, such as OBCO or OACO.

The moment of a force P about a point O, Fig. 2, is a measure of its tendency to produce rotation about an axis passing through O. The moment is equal to the product of the magnitude of the force and the perpendicular distance between the line of action of the force and the axis of rotation, thus  $T = P \times OA$ , where T is the moment in poundals-feet, or in lb.-ft. if the force is measured in pounds weight.

The moment of inertia of a body about any axis is the sum of the products of the mass of each element of the body and the square of its distance from the axis; thus  $I = \sum mx^2$  where I is the moment of inertia, m the mass of any particle in the body and x is the distance of the particle from the axis. The relationship between the moment of the force and the angular acceleration which it produces

is given by  $T = I \frac{d\omega}{dt}$  where  $\omega$  is the angular velocity of the body in radians per sec. Two equal and parallel forces, PP (Fig. 3), acting in opposite directions produce a

couple or pure turning moment without a resultant force tending to cause translational motion. The couple is measured by the product of one of the forces and the perpendicular distance between their lines of action.

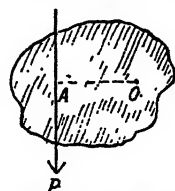
The impulse of a force is the product of the magnitude of the force and the time during which it is applied. The momentum of a body is the product of its mass and its velocity. The relationship between impulse and momentum is, given by  $F \times t = M \times v$ , which follows immediately from Newton's second law.

**WORK AND ENERGY.** Work is done by a force only when it produces displacement. The work done and the energy expended is measured by the product of the force and the displacement in the direction of the line of application of the force. The absolute units of work or energy are the foot-pound in the English system and the dyne-centimeter or erg in the C.G.S. system. Engineers find it convenient to use the foot-pound and kilogramme-metre as units of energy. The commercial unit of energy is the kilowatt-hour.

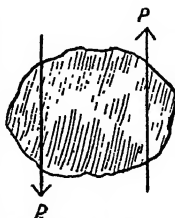
Power is the rate of doing work. One horse-power is equal to 33,000 ft.-lb. per min. and 1 kilowatt is equal to 44,240 ft.-lb. per min.

**Mechanics' Institute.** Institution designed originally for the education and improvement of working men. The first was established at Glasgow in 1823 by Dr. George Birkbeck. The London Mechanics' Institution founded in 1823, renamed the Birkbeck Institution, and later known as Birkbeck College (q.v.), is still an important centre for the teaching of science. The movement spread throughout the country, and institutes, often managed by a committee of working men, were established in many towns to provide usually a reading-room, a library, and a room for debates and lectures. They are now replaced for the most part by free libraries, etc.

**Mechitarists.** Society of Armenian Christians. It was founded in 1701 by Mechitar da Pietro (1716-1749), who became an Armenian priest in 1699, his object being to establish an organization for educating his fellow-countrymen and improving their religious condition. In 1715 he secured the island of San Lazzaro between the Lido and Venice, and founded there the Armenian convent. The Mechitarists have translated and published in Armenian many of the chief productions of European



Mechanics. Fig. 2



Mechanics. Fig. 3



1. Naval General Service 1793-1840. 2. Military General Service, 1793-1814. 3. Waterloo, 1815. 4. Kabul, also Kandahar and Ghazni, 1842. 5. Sind, 1842-43. 6. Gwalior star, 1843. 7. China, 1842, 1857-60, 1900. 8. Suttie, 1845-46. 9. New Zealand, 1845-60. 10. Punjab,

1848-49. 11. India General Service, 1854-95. 12. South Africa, 1834-35, 1846-47, 1850-53, 1877-79. 13. Crimea 1854-56 (British). 14. Crimea (Turkish issue to British, 15. Baltic, 1854-55. 16. Indian Mutiny 1857-58. 17. Canada Gen Serv 1866-70. 18. Abyssinia 1867-68.

# **MEDALS (1): BRITISH NAVAL AND MILITARY CAMPAIGN MEDALS WITH THEIR RIBBONS**

The majority of the actual medals measure 1½ inches in diameter.



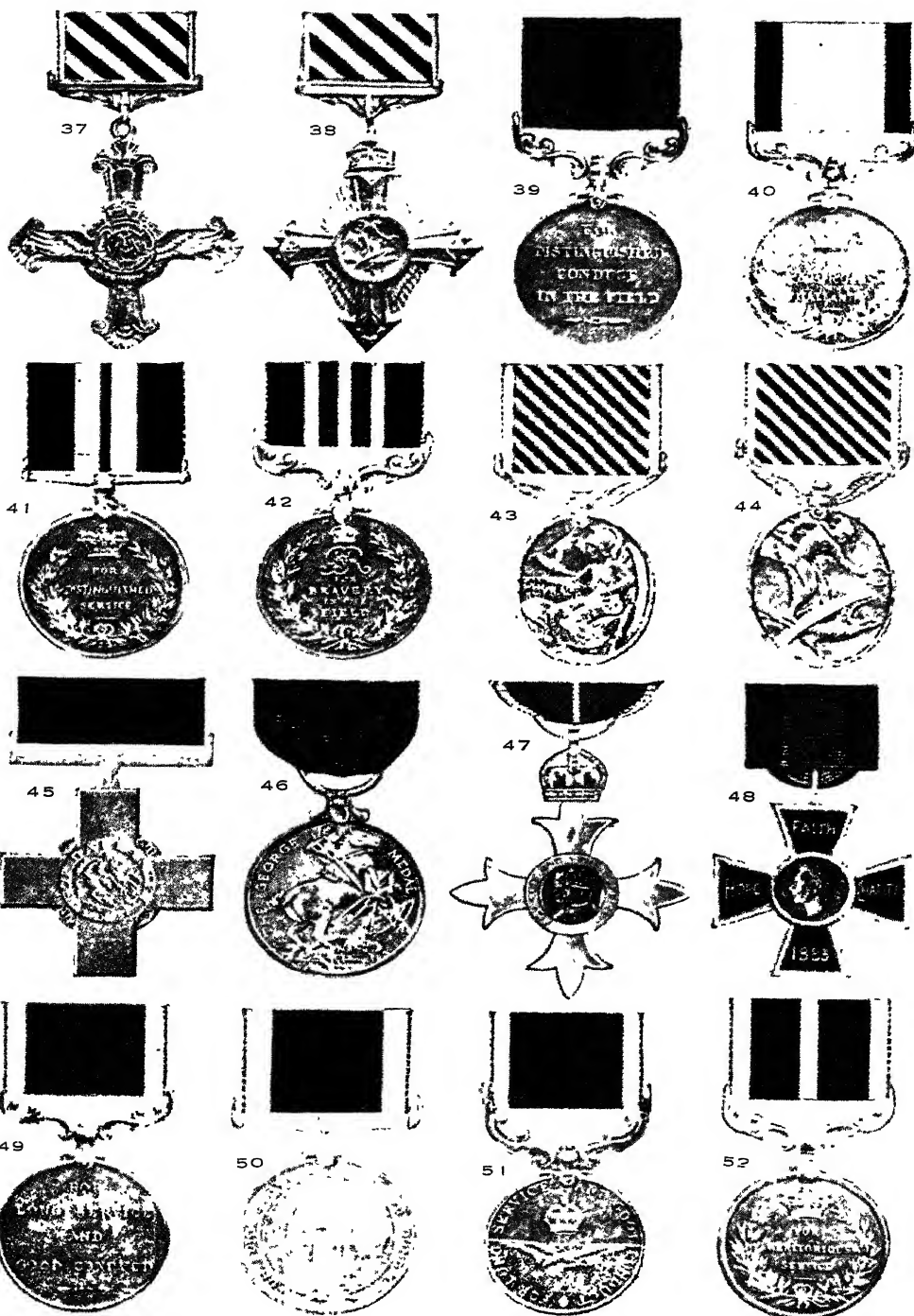


19. Ashanti and E. and W. Africa 1873-74, 1887-1900 20. Afghanistan 1878-80 21. Kabul to Kandahar star, 1880 22. Cape Gen. Serv., 1880-87 1896-97. 23. Egypt, 1882-89 24. Khedive's star, 1885 25. N.W. Canada, 1885 26. Brit. S.A. Co's medal for Matabeleland, 1893, Rhodesia, 1896, Mashonaland, 1897. 27. Ashanti star, 1896 28. India

Gen. Serv., 1895-1902 29. Cent. Africa, 1891-98 30. Sudan, 1896-97 31. Khedive's medal 32. Ribbon of E. and Cent. Africa medal, 1897-99 reverse, except for inscription, as 36 33. Ribbon of Queen's S.A. medal, 1899-1902, reverse as 34 34. King's S.A. medal, 1901-02. 35. Ashanti, 1901 36. Africa Gen. Serv., 1900-14

**MEDALS (2) BRITISH NAVAL AND MILITARY CAMPAIGN MEDALS WITH THEIR RIBBONS**  
The majority of the actual medals measure 1½ inches in diameter





37. Distinguished Flying Cross (Operational Flying)  
38. Air Force Cross (Non-Operational Flying) 39.  
Distinguished Conduct Medal (Army) 40. Con-  
spicuous Gallantry Medal (Navy) 41. Distinguished  
Service Medal (Navy) 42. Military Medal (Army)  
43. Distinguished Flying Medal (Operational Fly-  
ing) 44. Air Force Medal (Non-operational Fly-  
ing) 45. George Cross (Civil and Military) 46. George

Medal (Civil and Military) 47. Order of the British  
Empire (Military division) 48. Royal Red Cross  
(Civil and Military nursing services) 49. Long  
Service and Good Conduct Medal (Army) 50. Long  
Service and Good Conduct Medal (Navy) 51. Long  
Service and Good Conduct Medal (RAF)  
52. Meritorious Service Medal (Army and Royal  
Marines non-commissioned officers)

### MEDALS (3): BRITISH GALLANTRY AWARDS AND SERVICE MEDALS WITH THEIR RIBBONS

The majority of the actual medals are shown in the following pages.



53 India General Service, 1908-1919. 54 Naval General Service Medal 55 1914-1915 Star Medal. 1914-1919 56 British War Medal 1914-1918 57 Victory Medal, 1914-1918 58. Mercantile Marine War Medal, 1914-1918 59. 1939-1945 Star Similar ribbons A. Italy Star B. Pacific Star C. Burma Star. D. Africa Star E. Atlantic Star F. Aircrew Europe Star G. France and Germany Star

60 Ribbon of King's Medal for Courage in the Cause of Freedom, 1940-1945. 61. Ribbon of the India Service Medal, 1939-1945. 62. Ribbon of King's Medal for Service in the Cause of Freedom, 1940-1945 63 Defence Medal 64 Victoria Cross 65 Distinguished Service Order 66 Distinguished Service Cross (Navy) 67 Military Cross 68. Ribbon of Canada Medal, 1939-1945. 69 Ribbon of the British War Medal, 1939-1945

#### MEDALS (4): BRITISH CAMPAIGN MEDALS, GALLANTRY AWARDS, AND RIBBONS

The majority of the actual medals measure 1½ inches in diameter

literature. They have also an academy at Vienna which was founded in 1810.

**Mechlin.** An alternative name for the Belgian town of Malines (Flem. Mechelen). The word often designates a variety of lace which was originally made there. See Lace; Malines.

**Mecklenburg.** *Land* of E. Germany, lying N. of Brandenburg and W. of Pomerania. It was split into two grand duchies until 1918, and two free states under the Weimar republic. Together in area 6,200 sq. m., with 822,000 inhabitants, and called after their capitals Mecklenburg-Schwerin and Mecklenburg-Strelitz, they covered agricultural plains interspersed with hundreds of lakes (Müritz-See, 53 sq.m.). They contained the Baltic ports of Wismar and Rostock, the latter with the oldest university in N. Germany. Cattle and horse-breeding, fishing, ship-building, engineering, and industries connected with agriculture and with seaside resorts secured moderate prosperity.

Originally inhabited by Slavonic tribes, Mecklenburg was conquered by Henry the Lion in the 12th century. The Obotrite rulers were baptized and continued in succession until the 1918 revolution, though parts of their lands, with Wismar, were annexed by Sweden in 1648 and not recovered until 1803. Both countries had until early in the 20th century a reactionary constitution. In 1918 they adopted republican forms. In 1934 the Nazis placed them, together with Lübeck, under a Reich statthalter.

British troops entering Mecklenburg from the W., Russians from the E. in the last stages of the Second Great War met on the Baltic near Wismar, May 2, 1945. After the German surrender, Mecklenburg lay within the zone of Russian occupation.

Several Mecklenburg rulers have been related by marriage to the British royal house, Charlotte of Mecklenburg-Strelitz being queen of George III.

**Mecklenburg Bay.** Wide bay of the Baltic Sea in N. Germany. It is nearly 50 m. wide between Fehmarn Island and Darss, and 30 m. long. See Lübeck Bay.

**Mecklenburgh Square.** London square. It lies to the W. of Gray's Inn Road, W.C., and E. of the grounds of the old Foundling Hospital, on part of the estate of which it was built early in the 19th century. It was named after Mecklenburg-Strelitz, of which

Charlotte, consort of George III, was a princess. London House, a residential centre for students from the dominions, occupies the S. side of the square. In 1950 a fund was raised by the lord mayor of London (in thanksgiving for food parcels sent from the U.S.A. and the dominions) to provide further accommodation for overseas students on the N. and E. sides of the square.

**Médaille Militaire.** French decoration. It was founded in 1852 to reward French private soldiers and non-commissioned officers for bravery in the field. During both Great Wars several Allied soldiers were recipients, and in 1947 the medal was awarded to Winston Churchill, Marshal Stalin, and posthumously F.D. Roosevelt.



Médaille Militaire  
Spink & Sons

**Medal** (Fr. *medaille*, from Ital. *medaglia*, a coin, from Low Lat. *medalia*, a small coin, corrupted from Lat. *metallum*, metal). Piece of metal struck to preserve the memory of some eminent person, to commemorate some illustrious action or event, or as an award for gallantry or merit. Medals form a branch of the art of numismatics and, like coins, may be cast or struck from gold, silver, or alloys of base metals.

The Greeks and the Romans struck large medals as medallions in honour of certain events or personages. One such was that awarded to victors at the Olympic games. Other Greek medals commemorated military successes, or were issued in honour of poets, artists, and philosophers. Roman medals usually carried on the reverse the reigning emperor's head, and on the obverse representations of heroes, divinities, or places associated with the event or object commemorated.

After the fall of the Roman empire, the art of the medallist rapidly declined and few medals were struck apart from miraculous and scapular medals distributed to the faithful by the Holy See. With the Renaissance, the design and production of medals revived. The greatest exponent of medallic art was the Veronese painter, Vittore Pisano (1380-1456). His medals, generally signed Opus Pisani Pictoris, founded a tradi-

tion of vivid sculpture and simplicity of treatment that continued until the end of the 16th century. Cellini, in Italy, Dürer in Germany, Pilon and Dupré in France also designed outstanding medals.

Most modern medals are struck to commemorate war service or to award gallantry in action: they are a development of the badges suspended from the chains of knighthood. The first recognizable war medal was a papal medal specially struck in 1430 and presented to John Kendall, Prior of the knights of S. John, for his relief of Rhodes.

Queen Elizabeth was the first sovereign to bestow a medal for particular military service to the crown. This was the Ark in Flood medal (so called from its design) to commemorate the victory over the Armada in 1588, and granted to certain captains in the makeshift fleet that defeated the Spanish. A modified version was issued by James I to successful admirals. Under royal warrant dated May 18, 1643, Charles I authorised the first army medal. This was a silver badge bearing the royal effigy and cypher, and was awarded to every man who had done faithful service in the forlorn hope, i.e. the tactical advance guard of those days. In 1649 the Commonwealth parliament struck gold medals for the navy, and a year later authorised the medal of parliament for the army. These medals were worn round the neck suspended from a gold chain, and their bestowal was restricted to officers in command. The first English campaign medal, a small silver badge pinned to the coat, was issued by Cromwell to all officers and men who took part in the battle of Dunbar, Sept. 3, 1650. Thereafter, however, the issue of medals was again confined to commanding officers. The one awarded for the suppression of the Monmouth rebellion was bestowed upon Bishop Mew, who had commanded the royal artillery at Sedgemoor. An unofficial medal was given by the Cumberland society to certain officers who had taken part in the battle of Culloden in 1745. The only British medal issued for the American War of Independence was that specially struck by parliament to reward Captain Ewing's distinguished service at Bunker Hill.

In 1795, gold medals were awarded to the admirals and captains who had commanded in Lord Howe's victory over the

French fleet on June 1, 1794. Admiralty orders laid down that admirals were to wear them suspended from a blue and white ribbon round the neck, while captains were to attach them to the third buttonhole of their coats with a similar ribbon. This was the first official mention of medal ribbon.

Because there was no official medal for the lower deck at the battle of the Nile Nelson's prize agent, Alexander Davison, had medals struck at his own expense and distributed to all ratings who had taken part in the action. Similar private distribution of commemorative medals was made by the Soho mint after Trafalgar. The East India Co. awarded the Deccan medal to all European and native troops participating in the 1778-84 campaigns.

#### Introduction of the Clasp

During the early campaigns of the Peninsular War field officers received a gold medal for every battle in which they took part. But owing to expense clasps (the first instance of medal clasps) were introduced: when an officer had earned a medal and four clasps, he surrendered the decoration and received a gold cross in its place. Clasps were then added to the ribbon of the cross for additional battles. The first campaign medal similar in design and metal to be issued to all ranks was the Waterloo medal, awarded in 1816. The China medal (1840-42) was also given to all ranks as was the East India Co. medal for Jellalabad (1842).

Medals for rank and file who served in the Peninsular War were not issued until 1847, 34 years after the date of the last battle, and then only to surviving claimants. This accounts for the fact that the profile of Queen Victoria appears on medals bearing bars for Maida, Corunna, etc. In 1848 a silver medal was struck by the govt. for naval ratings who had taken part in the sea operations of the Napoleonic wars. These two medals eventually became the General Service medal for army and for navy.

Since the issue of the China medal in 1842, every British naval and military operation of importance has been officially recognized by the grant to all ranks participating of a medal, or of a clasp to a previous medal. Of the medals issued for service in the First Great War the Victory medal was unique in that its design and ribbon were common

to all the Allied navies and armies. The largest number of campaign medals issued for any one war were those of the Second Great War; one of these, the Defence medal, was the most widely distributed of any war medal, and was unique in being awarded to civilians as well as military personnel. (*See Campaign Stars.*)

Until the institution of the Meritorious Service medal in 1845 there was no gallantry award for non-commissioned ranks in the navy or the army; gallantry and distinguished service in officers was recognized by making them knights or companions of one of the orders, usually the Bath. In 1854 the Distinguished Conduct medal was instituted for all ranks; this was followed by the Victoria Cross in 1856 and the Conspicuous Gallantry medal in 1874.

Other groups of medals worthy of notice are navy, army, and R.A.F. long service and good conduct medals; also ceremonial medals, such as those issued for coronations and jubilees; official civil awards, notably the Albert and Edward medals; and unofficial civil medals, such as those presented by the Royal Humane Society, Lloyd's, and the Royal National Lifeboat Institution.

#### Design of Ribbons

Medals and decorations are worn suspended from a ribbon, the colours of which generally symbolise the event or campaign for which the medal was issued. So much ingenuity is displayed in evolving colour combinations that among the ribbons of the 3,500 distinct British and foreign medals and decorations is less than half-a-dozen instances are the colours duplicated, e.g. the British jubilee ribbon of 1935 is the same as that of the Massachusetts Civil medal; and the Arkansas State medal has its ribbon duplicated in a Yugoslav order.

Amongst the most appropriately coloured British medal ribbons are: the yellow, red, and black of the Omdurman medal, symbolising the red-coated British troops in the desert repelling the black followers of the Mahdi; the white and blue ribbon of the Egyptian wars, referring to the country lying between the White and Blue Niles; and the green and red separated by a white stripe of the Mercantile Marine medal (1914-1918), representing the port, starboard, and masthead lights of a ship.

One of the most successfully symbolic ribbons of the Second

Great War is that of the Defence medal: flame, for air attack; green for "England's green and pleasant land"; two black stripes for the black-out. The red, white, and green of the Italy Star is a unique instance of a victor's war medal ribbon adopting the national colours of the vanquished; the red, white, and blue of the France and Germany Star are the colours notably of the U.K., but also of France, the country liberated. *See Numismatics; also the separate entries on the principal medals and decorations. Consult British Medals and Decorations, D. H. Irwin, 1899; The Medal Collector, S. C. Johnson, 1921; Ribbons and Medals, H. Taprell Dorling, 1947.*

David Le Roi

**Medea.** In Greek mythology, daughter of Aëtes, king of Colchis. When Jason came to Colchis in search of the Golden Fleece, Medea fell in love with him, and by magic



Medea. A 16th century copy of a 5th century B.C. Greek relief

arts assisted him to obtain possession of the prize. She returned with Jason to Iolcus as his wife. There it was found that Pelias the king had murdered his half-brother Aeson, Jason's father. In revenge, Medea persuaded the daughters of Pelias to cut their father in pieces and boil him, deceiving them into the belief that he would thereby become young again. Expelled from Iolcus for this deed, Medea and Jason next went to Corinth, where Jason deserted Medea for Creusa, daughter of Creon, the king. Medea avenged herself on Creusa by sending her a poisoned garment, which killed her, and by murdering the two children whom she had borne to Jason. Medea is said then to have fled to Athens, and to have there married king Aegeus. A plot by her to poison Theseus

having been discovered, she escaped from Athens to Asia. The tragic life of Medea is the subject of fine plays by Euripides and Corneille. See Argonauts; Jason.

**Médecin Malgré Lui**, *Le* (The Doctor in Spite of Himself). Farical comedy in three acts by Molière, produced at the Palais-Royal, Paris, Aug. 6, 1666. Sganarelle, a character acted by the author, having been taunted into thrashing his wife, she retaliates by proclaiming that he is an eccentric but learned physician who will not admit his learning unless he is soundly beaten. The play was founded on an old fabliau.

**Medellin**. Second largest city of Colombia and capital of the dept. of Antioquia. It is built at an alt. of 5,042 ft. and enjoys a summer-like climate throughout the year. It is 42 m. S.E. of Antioquia and 125 m. N.W. of Bogotá, and connected by rly. with Puerto Berrio on the Magdalena. The seat of an archbishop, it was founded in 1674, and has a university (instituted 1822), schools of mining and engineering, a mint, libraries, and tennis, football, and polo grounds. A centre of gold and silver mining, it also produces silk, cotton, wool, coffee, chocolate, cigarettes and cigars, hats, crockery, glassware, matches, and shoes. The district contains good motor roads. Pop. 198,100.

**Medes** (Assyr. *Amadd*). Aryan people closely associated in language and descent with the Persians. When the Assyrians invaded their country in the 9th century B.C. they were settled in the Kurdish Mts. east of Lake Urumiyeh. In later times the name included the inhabitants of the countries into which the Medes migrated. They are mentioned several times in the O.T., first in Gen. 10 as the Madai, descendants of Japheth. In the Assyrian tablets they are first mentioned, as Amada, by Shalmaneser II. Darius the Mede (Dan. 5) has been identified with the Gubaru or Ugbaru of the Babylonian inscriptions. "The laws of the Medes and Persians" became a synonym for the unalterable. See Media.

**Bibliography**. The Five Great Monarchies of the Ancient Eastern World, G. Rawlinson, 1862-67; Cuneiform Inscriptions of W. Asia, H. C. Rawlinson, 1870-91; Le Peuple et la Langue des Médes, J. Oppert, 1879; Races of the O.T., A. H. Sayce, 1891.

**Medford**. City of Massachusetts, U.S.A. In Middlesex co. and virtually a N.W. suburb of Boston, it is linked by rly. with

that city, and stands on the Mystic river. Historic buildings, all of the 17th century, are Cradock, Wellington, and Royall Houses, for Medford was founded in 1630, though not a city until 1892. Tuft's College, now with 770 teachers, was opened in 1852. Medford rum and Medford-built sailing ships once were famous names, but both industries declined with the coming of steam, and now machinery and chemicals are made. Pop. 63,083. Another Medford is in Oregon; pop. 11,281.

**Media**. Ancient country of W. Asia, lying S. and S.W. of the Caspian Sea, and wholly contained in the territory of the modern state of Persia. Its surface was part of the great Iranian tableland, mostly 3,000 ft.-5,000 ft. above sea level. It enjoyed a temperate climate, with cold winters and a fertile soil. The capital was Ecbatana, the modern Hamadan. Shortly after 700 B.C. the Medes threw off the Assyrian yoke, and became a great nation under their kings Phraortes and his son Cyaxares. The successive steps in the extension of the Median empire are obscure, but in 606 Cyaxares took Nineveh and overthrew the Assyrians.

In 549 Cyrus of Persia, who acknowledged the sovereignty of Astyages, son of Cyaxares, rebelled, and by 500 was ruler of a combined empire of Medes and Persians. With the overthrow of the Persians by Alexander the Great after the battle of Arbela in 331, Media became part of Alexander's empire. After his death in 323, it formed part of the kingdom of the Seleucidae, until in 147 it was conquered by the Parthians and was finally merged in Persia under the Sassanians in the 3rd cent. A.D. See Cyrus; Persia.

**Median**. In geometry, each of the three lines drawn from the middle points of the sides of a triangle to the vertices. Such lines meet in a point which is geometrically the centroid or commonly the centre of gravity of the triangle.

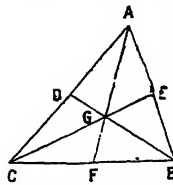


Figure showing medians, A F, B D, C E, of a triangle, A C B. The medians meet at the centroid or centre of gravity, G, of the triangle.

**Median Nerve**. One of the main nerves of the arm. It rises from the brachial plexus

on the outer side of the armpit, runs at first close to the axillary

artery, then inclines outwards, and passes down the middle of the forearm to the palm. It gives off branches, which supply all the superficial flexors of the forearm except the flexor carpi ulnaris; while a branch, the anterior interosseus, given off just below the elbow joint, supplies the deep muscles of the forearm. In the hand, the nerve supplies various muscles of the thumb and fingers, and is also a nerve of sensation to the thumb, the index and middle fingers, and the outer side of the ring finger.

**Mediant**. Third note of the musical scale, so called from its position midway between the other two principal notes, the tonic and the dominant. The mediant has the important function of determining the mode as major or minor, thus:



See Mode.

**Mediatiation** (late Lat. *mediatus*, middle). Term derived from feudal usages. In feudal times land was held immediately, i.e. direct from the king, or mediately, i.e. from some other lord who in his turn was the king's vassal. In 1803, during the changes occasioned by the French Revolution, certain princes ceased to be the emperor's vassals direct, but were placed under rulers of lesser rank. To this process, which amounted in practice to depriving these princes of their sovereign rights, for the emperor's authority over them had been nominal, the name mediatiation was given. It was carried further in 1806 in order to provide for Napoleon's territorial changes, and these rights were never restored, although the mediatized princes of Germany formed for some time a distinct class, retaining equality of birth with the reigning princes.

**Medical Association, BRITISH**. Details of this organization of medical men will be found under British Medical Association.

**Medical Directory**. British reference book of the medical profession. First published in 1844, the number of doctors listed increased from 10,962 (1850) to 68,235 (1944). The directory is issued by J. and A. Churchill Ltd.

**Medical Officer of Health**. In Great Britain an official appointed by all county, borough, and district councils. He must be a qualified medical practitioner and must have additional qualifications

in public health. His duties are prescribed by various Acts of Parliament, by the ministry of Health, or by the council employing him. He receives notices of all births, and is concerned with the sale of food and drugs, housing, infectious diseases, sanitation, and with public health generally.

**Medical Practitioner.** One who practises medicine. In the British Isles the term is usually restricted to a registered medical practitioner, *i.e.* a person who, having obtained a registrable qualification, has been registered under the Medical Act of 1858. The qualifications are granted after a specified course of study has been followed and certain examinations have been passed. The holder of these qualifications may have a university degree in medicine (M.B., Ch.B., or M.D.). He may also, or alternatively, hold a diploma from some recognized professional body such as the Royal College of Physicians. Such qualifications do not attach to him special privileges

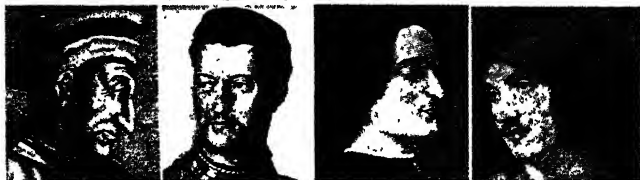
tive direction of a committee of the privy council and applies money voted by parliament or received from private sources for medical research. Its laboratories, and the National Institute for Medical Research, opened 1950, are at Mill Hill, Middlesex. Offices: 38, Old Queen St., London, S.W.1.

**Medici.** Ruling family in Florence. It was prominent in the Florentine republic from the 13th century, and amassed wealth by trade, especially banking. Giovanni, father of Cosimo the elder, was the real founder of the greatness of the family, in which the headship of the state became hereditary. His great-grandson, Lorenzo, was succeeded by his son Piero II, who made cowardly concessions to the French, and was expelled with the rest of the family by the Florentines in 1494, but in 1512 they were recalled. Piero's brother Giuliano II was restored to the old pre-eminence, and in 1513 the third brother, Giovanni, became Pope Leo X (*q.v.*).

father's death in 1429 occupied a leading position, but in 1433 was banished. Recalled the next year by the citizens, he expelled his enemies, and while remaining nominally a private citizen, was the virtual despot of Florence for the rest of his life. A generous patron of art and learning, he founded a Platonic academy and collected many ancient MSS. He died Aug. 1, 1464, and the words Father of his Country were inscribed on his tomb. *See* Florence.

**Medici, COSIMO DE' (1519-74).** Grand duke of Tuscany. The son of the condottiere Giovanni de' Medici, he belonged to a junior branch of the family, and on the murder of Alessandro de' Medici, duke of Florence, in 1537, he was proposed as a candidate by the historian Guicciardini and acknowledged as duke by the emperor Charles V. He maintained his rule by a system of espionage and secret murder. He was, however, an able ruler, organized the Tuscan state as a political unit, and established a strong army. In 1555 he took Siena, which two years later was formally ceded to him. In 1569 Cosimo was raised by Pope Pius V to the rank of grand duke. He died April 21, 1574. *See* Florence; Tuscany.

**Medici, LORENZO DE' (1449-92).** Ruler of Florence. The elder son of Piero de' Medici, he was born Jan. 1, 1449, and in 1469, on his father's death, he and his brother Giuliano were declared the chiefs of the state. He escaped the Pazzi conspiracy, 1478, though Giuliano was assassinated. Vengeance on the conspirators, who included the archbishop of Pisa, led to an invasion of Florence by Pope Sixtus IV, and the king of Naples, who, however, was won over by Lorenzo in 1479, and peace was made. An able diplomatist, Lorenzo cultivated the friendship of Milan in order to weaken Venice. He consolidated his power at home by creating a subservient senate, and won popularity by lavishing his wealth on the city, which he raised to great splendour. Himself a poet and scholar, he assembled a brilliant group of literary men, both Greek and Italian, at his court, and encouraged painters and sculptors. He enriched the Laurentian library with priceless MSS., collected antique sculpture, founded a Platonic academy, and numbered Politian and Pico among his friends. Lorenzo, who was styled the Magnificent, died April 8, 1492. *See* Florence; Renaissance. *Consult* Lives, D. G. Loth, 1930. G. Maguire, 1936.



Medici. Members of the famous Florentine family. Left to right: Cosimo the elder; Cosimo (d. 1574); Giuliano (by Botticelli); Lorenzo (by Titian)

To secure these he must be registered by the General Medical Council.

Only a registered medical practitioner is entitled to practise medicine and to sue for his fees. Further, only a registered practitioner can give a medical certificate valid for public purposes, or hold a public medical appointment. Registered practitioners are exempt from service on juries. Disciplinary control of medical practitioners in professional matters is exercised by the General Medical Council, but medical practitioners may have their names removed from the lists under the National Health Acts by a tribunal. In 1950 a bill provided that a registered medical practitioner must have had hospital experience, and proposed a medical disciplinary committee to replace the G. M. C. *See* Medicine; Surgery.

**Medical Research Council.** British medical institution. Established in 1913, it was formerly the Medical Research Committee, being incorporated under its present title by royal charter on April 1, 1920. It is under the administra-

Two years after Leo's death in 1521, Giulio de' Medici, an illegitimate nephew of the great Lorenzo, became pope as Clement VII, and died in 1534. Meanwhile Florence had been ruled by other members of the Medici family or by nominees of the Medici popes; and in 1530 Alessandro de' Medici was recognized as hereditary duke of Florence by the emperor Charles V. After a vicious and tyrannical career, he was murdered by his cousin in 1537. As dukes, and from 1569 as grand dukes, the family continued to reign in Florence until the line was extinguished in 1737. Two of the daughters of the house also acquired fame as Queen Mother in France, Catherine de' Medici (*q.v.*), wife of Henry II, and Marie de' Medici (*q.v.*), second wife of Henry IV. *See* Florence; Tuscany.

**Medici, COSIMO DE', THE ELDER (1389-1464).** Florentine statesman. The elder son of Giovanni de' Medici, he inherited great wealth. On the deposition of Pope John XXIII, he ransomed him from the duke of Bavaria, and sheltered him at Florence. Cosimo after his



# MEDICINE AND ITS MASTERS

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*A history of medicine, this article forms a useful commentary on those dealing with the various diseases, e.g. Leprosy; Smallpox; Tuberculosis; Typhus, etc. See also Anaesthesia; Anatomy; Bacteriology; Physiology; Surgery; the biographies of Harvey, Hunter, Jenner, and others*

The earliest group of scientific medical documents is the Hippocratic Collection, put together about 300 B.C. Only a small portion is by Hippocrates, and some portions are at least as old as the 6th century. Even the most ancient of these evidently implies a long and settled civilization, but of this earlier history we are almost ignorant. As regards the knowledge that they contain, the strongest feature of the Hippocratic writings is close and accurate observation of the course of disease and consequent accuracy of prognosis, and, within certain limits, also of diagnosis. The general theoretical basis of the collection is that doctrine of the humours which lasted till the 18th century. As regards treatment, the best and clearest works are the surgical, especially that on fractures and dislocations, the treatment of which is in many cases that of current practice. The weakest feature is the ignorance of anatomy, making accurate diagnosis often impossible. There is no evidence of dissection.

The lack of anatomical knowledge was partially repaired by the Lyceum in the 4th, and by the Alexandrian school in the 3rd century. Both these bodies made advances also in experimental physiology. The result of this evolution is evident in the work of Celsus at the beginning of the 1st century A.D. Celsus gives a very exact account of surgical practice, and has an accurate though limited knowledge of anatomy. He is clear and definite in prognosis and diagnosis, while his line of treatment, especially in surgery, is sane, useful, and humane. He is totally devoid of any theurgic element. Dioscorides, who acted as surgeon in the service of Nero, carried on the botanical work of Theophrastus (370-286 B.C.), the pupil of Aristotle, and adapted the knowledge of herbs to medical purposes.

## Galen's Great Work

The 2nd century of the Christian era is a very brilliant period in medical history. Rufus of Ephesus and Soranus of Ephesus made anatomical and physiological investigations, but especially industrious and scientific was Galen of Pergamum. His books form a "gigantic encyclopaedia of the

knowledge of his time. He gave us the four classic symptoms of inflammation, differentiated pneumonia from pleurisy, was the first to mention aneurism, and described the different forms of phthisis, mentioning its infectious nature." (Garrison.) He dissected a number of animals and gave accurate anatomical descriptions. He made numerous physiological experiments, and though his deductions were often hasty, his methods were sound.

The ages that followed Galen seized on his conclusions rather than his methods, and progressively misunderstood them. The flickering light of medical science burned for a while in Magna Graecia, and was still dimly glowing at Salerno in the 11th century, when it was fanned into a feeble flame by Arabian learning. From the 8th until the 12th century the intellectual hegemony was with the Orient, whither Greek learning passed. This material was received again into the West by retranslation from Arabic into Latin, and provided the staple medical treatises from the 12th to the 16th century.

## Harvey and Modern Medicine

With the 16th century this was changed. Among the earliest medical writers to free themselves from Arabian tradition was Fracastor, who placed the theory of infection on a sound basis, and Paracelsus, who introduced chemical conceptions into medicine. It was, however, the anatomists who did most to create the new era in medicine, and among them the greatest was Vesalius. His anatomy was used by Ambroise Paré for the improvement of surgical technique. The absence of exact anatomical description had hitherto rendered rational physiology impossible, but now the researches of Michael Servetus, Mateo Realdo Colombo, and Hieronymus Fabricius culminated in the immortal work of William Harvey, whose discovery was published in 1628.

The circulation of the blood is the central doctrine of modern medicine, and its acceptance and comprehension were essential for that progress in all departments which characterised the 17th century. This period saw the first application of the microscope, with which the names of Gahleo, Mar-

cello Malpighi, Anthony Leeuwenhoeck, and Robert Hooke are associated.

The earliest years of the 18th century saw clinical teaching placed on a recognized footing by Hermann Boerhaave, for foreign students flocked to him at Leiden, and his reputation became world-wide. Among his most famous pupils were Albert von Haller, perhaps the most learned of all physicians and a profound and original physiologist, Sir John Pringle, the pioneer of antiseptics, who did much to humanise warfare and to organize an efficient ambulance service, and William Cullen, who lacked originality, but who introduced improved methods of medical teaching into England. With these men may be mentioned three great English clinicians, William Heberden, a man of one book which absorbed his whole life and contained numerous valuable observations on general medicine, John Huxham, who did valuable work in epidemiology, and Edward Jenner, whose name will always be associated with vaccination.

All these names pale before the brilliance of John Hunter, who is to be classed with the very greatest names in medicine. "His permanent position in science is based upon the fact that he was the founder of experimental and surgical pathology and a pioneer in comparative physiology and experimental morphology" (Garrison). Important Continental contemporaries of Hunter were Leopold Auenbrugger, the discoverer of auscultation, and Giovanni Morgagni, who did for pathology what Vesalius had done for anatomy. In England the work of Morgagni was continued by Matthew Baillie.

## Some French Pioneers

In the early part of the 19th century the greatest advances were made in France, where Pierre Louis, the founder of medical statistics, René Laennec, the inventor of the stethoscope and elucidator of thoracic disease, Pierre Bretonneau, the epidemiologist, Jean Nicholas Corvisart, the founder of modern cardiology, Philippe Pinel, the reformer of the asylum system, and Marie François Bichat, the father of modern histology, form a very remarkable group.

Somewhat later in the field appeared the Austrians, Skoda, the great clinical expert, Rokitsansky, with his vast pathological experience, Hebra, the founder of scientific dermatology, Semmelweis, who introduced antiseptic

methods into midwifery, and Politzer, one of the earliest of the modern specialists. These men contributed to the high reputation of the Vienna school. In Germany the men of distinction in the mid-19th century were more scattered than in Austria. Among them were, the histologists Friedrich Henle, Rudolph Kölliker, and Wilhelm Waldeyer. H. L. F. von Helmholtz takes his place in medicine as a physiologist, and as inventor of the ophthalmoscope. Hoppe Seyler, Rudolph Virchow, Albert Billroth, and Johann von Esmarch all did fundamental work.

The same period in England was marked chiefly by clinical, and especially surgical advance, following the stimulus of Hunter. Here Charles Bell attained distinction alike in surgery, anatomy, physiology, and art; Sharpey and Bowman followed in the footsteps of Abernethy in the organization of medical teaching; Astley Cooper, Syme, Liston, and Brodie laid the foundation of more recent surgical developments. Towards the end of the period in which these men lived surgery was revolutionised by the introduction of anaesthesia in America by Morton. This was popularised later in Great Britain by the obstetric practice of Simpson.

#### Contemporary Developments

The latest period of medicine has been profoundly influenced by two men, neither of whom possessed a medical diploma. Darwin, by placing the doctrine of evolution on an observational basis, gave a new stimulus and meaning to all forms of biological research, while Pasteur, and after him Koch and Lister, by their demonstration of the germinal origin of pathological processes, elucidated a vast number of phenomena which were previously inexplicable.

The great practical changes thus wrought have been the universal adoption of aseptic principles in surgery and the rise into the front rank of importance of the study of infective phenomena in medicine. Preventive medicine and aseptic surgery have saved more lives than any previous medical measures, and they have become of great economic importance, since by reducing deaths they have counterbalanced some effects of the fall in the birth-rate that has set in almost universally.

**Bibliography.** Medical History from the Earliest Times, E. T. Withington, 1894; Introduction to the History of Medicine, F. H. Garrison, 4th ed. 1929; Great Doctors, H. E. Sigerist, Eng. trans.

1933; History of Medicine, D. Guthrie, 1945; Short History of Medicine, C. Singer, 2nd ed. 1945.

**Medicine, FORENSIC, or MEDICAL JURISPRUDENCE.** The application of medical knowledge to purposes of the law. The most frequent occasions for its employment occur in the investigation of sudden deaths or deaths from causes other than natural. In the coroner's court, the police court, and the higher criminal courts, knowledge of medicine aids the law in the detection of crime. When a dead body has been found, the medical jurist may be called upon to express opinion as to the time which has elapsed since death.

Various forms of deaths from violence, e.g. hanging, strangulation, drowning, shooting, poisoning, leave distinctive features in the body, by the aid of which it may be possible to determine whether death was due to accident, suicide, or homicide. Among the living, various matters relating to birth or sex may demand the help of the medical jurist, such as questions arising in connexion with illegal operations, suits for nullity of marriage, and questions of paternity. Another sphere in which the law seeks the help of the medical man is insanity. Certain stringently enforced conditions must be complied with before lunatics can be certified as insane. Medical evidence is also required when irresponsibility for crime on the ground of insanity is pleaded in a criminal charge, and in questions relating to the validity of wills or contracts made by persons who are alleged to be insane.

Finally, the sphere of medical jurisprudence is now held to cover numerous matters pertaining to the conduct and control of medical practitioners, such as the constitution and functions of the General Medical Council; the question of professional secrecy; and the obligation of a medical practitioner to exercise reasonable skill and care in the treatment of patients.

The earliest rules governing medical practitioners occur in the Hammurabi Code (*q.v.*). Moses laid down laws for the examination of and report on wounds. In ancient Egypt medical practice was governed in detail by law. Among the Greeks medicine was comparatively free from restriction by law. The celebrated oath of Hippocrates enunciates the ethical principle which is today regarded as binding upon medical men generally, namely, that information gained at the bedside shall be regarded as inviolable. In Rome, under the republic, medicine was closely controlled by law. Justinian dealt with questions of impotence, hermaphroditism, etc., and fixed the maximum duration of pregnancy at 300 days.

Medical jurisprudence became a distinct branch early in the 16th century, and George, bishop of Bamberg, in 1507 drew up a code for medical evidence in courts of law. One of the earliest applications of medical jurisprudence was in the investigation of witchcraft, and about 1545 Dr. Johannes Wier of Arnheim published a book attacking the folly and superstition of witchcraft. This drew upon him the fury of the Church, and the book was placed upon the Index. The earliest work on the subject published in Great Britain was Dr. Samuel Farr's *Elements of Medical Jurisprudence*, 1787. A chair of medical jurisprudence was established in Edinburgh University in 1806. On the Continent, the science was developed by Fodere and Tardieu in France, Orfila in Spain, Casper in Berlin.

**Medicine Hat.** Town and co. of Alberta, Canada. The co. is in the S.E. of the prov., and contains the E. section of the best ranching country. The city stands on the S. Saskatchewan river, 176 m. S.E. of Calgary and 656 m. W. of Winnipeg. It is served by the main line of the C.P.R. The buildings include the Dominion Lands Office, general hospital, churches, and schools.



Medicine Hat, Alberta, Canada. View of the town, showing Riverside Park between the two bridges

It is the trading centre for a large district, and among the industries are the manufacture of flour, bricks, and cement. Natural gas is used for generating power. Coal and shale are found in the neighbourhood. Pop. 10,571.

**Medicine-Man.** A practitioner of the healing art and cognate mysteries in primitive culture. The

term, now generally preferred to the synonym witch-doctor, conveniently embraces such native names as the Eskimo *angekok*, the S. American *paya*, the Hausa *bori*, and the Zulu *inyanga*. It implies the professional exercise of magical powers in all levels of culture up to and including Shamanism, beyond which leechcraft and

consisting of three variable leaflets, with a pair of slender stipules at the base of the leaf-stalk. The yellow, occasionally violet, flowers are clustered in short sprays, and the seedpod is sickle-shaped. Another species is the black medick, or nonsuch (*M. lupulina*), a trailing biennial with its yellow flowers in an oval head, like a miniature hop-cone. The smooth, kidney-shaped pods of this species are black when ripe. Several others occur, but are rare in England. Lucerne (*q.v.*), or purple medick (*M. sativa*), a plant of the Mediterranean region, is largely grown as a green fodder plant, and has become naturalised here.

**Medina.** City of Arabia. It lies about 240 m. N. of Mecca, and is connected by the Hejaz rly. with the Palestine, Syrian, and Baghdad rlys. It is the second holy city of the Muslims, because it contains the tomb of Mahomet, and it is often called the Prophet's City. The tomb stands in a mosque of great magnificence, which is the chief feature of the place. The residence of Mahomet after his flight from Mecca, 622, it was also the home of the earliest caliphs. As a terminus of the Hejaz Rly., which reached it in 1908, Medina has a considerable trade. Its port on the Red Sea is Yembo, 125 m. to the S.W.

Before the First Great War all non-Muslims were rigidly excluded from it, but, like Mecca, it was visited by Burton and other Christian observers. During the First Great War it was attacked by the Hejaz army, in 1916, but the attempt failed. Thereafter it was invested, but somewhat loosely, and it did not finally yield till Jan., 1919, when, on representations from Constantinople insisting on its compliance with the terms of the armistice, its garrison laid down their arms. Pop. 50,000, but this number is greatly exceeded during the pilgrimage season.

**Medina Sandstones.** In geology, a group of sandstones, etc., of Silurian age, occurring near Medina in Orleans co., N. Y., where they are quarried for building.

**Medina Sidonia.** A town of Spain, in the prov. of Cadiz. It stands on a hill overlooking the Sequillo river, 20 m. S.E. of Cadiz. A ruined castle of the dukes of Medina Sidonia crowns the hill. The town is noted for its manufacture of pottery. Pop. 13,416.

**Medina Sidonia, ALONZO PEREZ DE GUZMAN, 7TH DUKE OF (1550-1615).** Spanish admiral. Born Sept. 10, 1550, a member of the famous Spanish house of Guzman, he was chosen by Philip II of Spain to command the Armada sent against England in 1588, on the ground that his rank



Medicine-Man. Medicine-Owl, famous Medicine-Man of the Black-foot Indians in Montana, U.S.A.

priestcraft tend to diverge. Usually set apart by initiation into the conventional secrets of their vocation, carrying their mysteries in a medicine-bag, and wearing a distinctive dress, medicine-men profess to control physical and psychical phenomena by various means, including incantation, dancing, drums, rattles, horns, sacrifice, appeal, amulets, ventriloquism, sleight of hand, and suggestion. In some cultural regions are added such preventive and curative methods as sweating, massage, counter-irritation, blood-letting, empirical decoctions, emetics, and crude surgery. See Exorcism; Magic; Rain-making Customs.

**Medick** (*Medicago falcata*). Perennial herb of the family Leguminosae. A native of Europe (including the E. counties of England), India, and N. Asia, it attains a height of 6 ins. to 2 ft., and has leaves



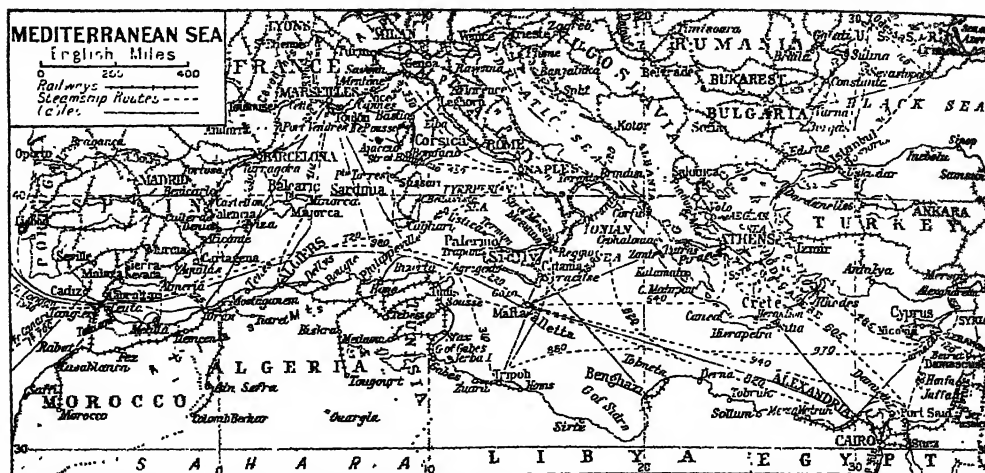
Medick. *Medicago sativa*, flower sprays of a Mediterranean medick



Medina, Arabia. Main street of the city, leading to the tomb of the Prophet

as the highest of Spanish grandees would ensure obedience. He had no qualifications, and was to be guided by advisers and instructions. On his return he hid himself in his palace at San Lucar. Subsequent disasters to the Spanish navy under his charge were the failure to protect Cadiz from the British and Dutch in 1596, and a defeat off Gibraltar in 1606. See Armada.

**Medinet-el-Fayum.** City in the Fayum district of Egypt, 25 m. S.W. of Cairo by rail. It is picturesquely situated on a branch of the Bahr Yusuf. N. of the town is the site of the ancient Arsinoë, and 6 m. S.E. is Hawara, where was the



**Mediterranean Sea.** Map of the world's largest enclosed sea, which lies between Europe, Asia, and Africa, has one connexion, the Straits of Gibraltar, with the open ocean, and is fed directly by one great river, the Nile

labyrinth described by Herodotus, which was regarded as one of the wonders of the world. Pop. 63,703. See Fayum.

**Medinet Habu** or **ABU**. Early Christian village on the W. plain of Thebes, Upper Egypt. Its more ancient remains include Rameses III's funerary temple, approached through a three-storeyed pavilion with inverted battlements of Syrian design. Its sculptured scenes comprise figures of Philistines and their wagons, and the earliest representation of a naval battle.

**Mediolanum.** Latin name for the city now known as Milan (q.v.).

**Meditations of Marcus Aurelius, THE.** Volume of thoughts setting forth the Stoic philosophy as received and modified by the Emperor Marcus Aurelius Antoninus. The work has long occupied a prominent place among ethical writings, and is notable for being suffused and softened by almost Christian feeling. The best known translation is that of George Long, 1862, though an earlier one is that of Jeremy Collier, 1701. See Marcus Aurelius.

**Mediterranean Fleet.** Title of units of the Royal Navy serving in the Mediterranean Sea. Entrusted with the maintenance of imperial lines of communication with India, the Far East, and Australia, and with the defence of the northern termination of the Suez Canal, the fleet was based on Malta and Alexandria until the latter port was handed over to the Egyptian government in 1946. It is not concerned with the defence of Gibraltar, which is the joint responsibility of the army and the Home Fleet. Between the two

Great Wars the strength of the Mediterranean force was kept at such a level that, in conjunction with the French navy, parity was maintained with the Italian navy.

The fleet was heavily reinforced after the surrender of France in June, 1940, but was always numerically inferior to the Italians. If it had not succeeded in controlling the eastern basin of the Mediterranean in 1940-41, Malta, Alexandria, and Port Said might all have fallen, the campaigns in Abyssinia, Libya, and Syria could scarcely have been conducted, and the British position in the Middle East would have been jeopardised. In addition to defeating the Italian navy, hunting U-boats, and withdrawing the army from Greece and Crete, the Mediterranean fleet also escorted vital Malta convoys. See Mediterranean Theatre.

**Mediterranean Sea** (Lat. *media*, middle; *terra*, land). Largest expanse of inland water in the world. It washes the shores of Europe, Africa, and Asia, and is, physically, a relic of a much larger sheet of water which extended in earlier geological times E. and N.E. to the Arctic. To the S. and S.E. is the geologically old plateau of Africa, to the N. the comparatively young mountains of S. Europe.

It comprises three basins: E., central, and W. The E. basin, about 1,200 m. long, between Sicily and Palestine, is almost surrounded by the plateaux of Asia Minor, Syria, and Palestine; most of it is more than a mile deep, while the greatest depth, 14,400 ft., has been sounded between Malta and Crete. The W. basin is about 960 m. long, and is deepest in the Tyrrhenian

Sea, 12,200 ft. This basin has been left by a foundering of ancient land, and round it there are still areas of weakness in the earth's crust; round it also the mountain system—Atlas, Apennines, Alps—belongs to the same geological period, the Tertiary, when the backbone of Europe was made. The central basin S. of Sicily is comparatively small, 200 m. long, and shallow, with a maximum depth of 4,200 ft.

The Adriatic Sea is shallow at the N. end and deep in the S., where the sea occupies an area which used to form the geologically ancient Dalmatia; the Aegean Sea, with its scattered islets and scattered deeps, similarly occupies part of an ancient Aegean plateau. The large islands of the Mediterranean are either relics of ancient land-masses—Corsica and Sardinia of the ancient Tyrrhenis, Chios and Rhodes of the ancient Aegean plateau—or they are detached fragments of the great E.-W. mountain system of Eurasia. The Balearic Islands connect the Sierra Nevada and the Alps; Sicily joins the Atlas Mts. to the Apennines, while Crete and Cyprus connect the Pindus Mts. with the Taurus Mts. and the Caucasus.

The waters of the Mediterranean evaporate very rapidly, for immediately to the S. is the rainless Sahara. During summer the Mediterranean area is almost everywhere arid and hot. Rains fall in the late autumn and winter, but the total quantity is small. The Nile is the only great river which feeds the sea directly, and its output is small except during the flood, and the flood water is gradually

being retained for irrigation; the output of the Po, Rhône, and Ebro is of little value.

The Mediterranean has two water gates; one to the Black Sea in the N.E. and one to the Atlantic Ocean in the W.; each is a sill between deep basins on either side. Because of the great evaporation, the water of the Mediterranean Sea is more saline and denser than the waters beyond the sills, so that in each case lighter and fresher water flows into the Mediterranean Sea as a surface current, while saltier and heavier water creeps over the sill as an outward current of less volume. The Mediterranean Sea is virtually tideless.

The hot, dry, almost cloudless summers and the warm winters of the Mediterranean area, with their accompaniment of rain, have produced a definite type of vegetation which can survive the summer scorching.

#### Cradle of Western Civilization

It is one of the commonplaces of the history of Western civilization that progress came westward along the Mediterranean; from Levantine sources in ancient times Rome learned from Greece and Egypt, from Levantine sources in the Middle Ages Christian Europe learned from the Saracens. From the Mediterranean Western Europe learned the art of seamanship; from the trading communities of the Italian peninsula Western Europe imbibed ideas of cooperative companies of merchant adventurers, with the consequence that England achieved through the East India, Hudson Bay, and other companies, the possession of large areas overseas. Of these India was early of greatest value, and the need for quick transit between the U.K. and India eventually led to the cutting of the Suez Canal, and to the British interest in Egypt. See Aragon; Atlantic; Levant; Sea-Power.

**Mediterranean Theatre of Operations.** After the opening of the Suez canal, 1869, control of the Mediterranean, in order to maintain imperial communications with India, the Far East, and Australasia, became a prime object of British policy. Until the advent of the submarine and of bombing from the air, Great Britain's strategic position in the Mediterranean proved unassailable. With naval bases at Malta and Gibraltar, she required only a comparatively small army to defend the canal; sea power made it possible for British Mediterranean garrisons to be reinforced at will, while the arid Sinai, Western, and Libyan deserts

protected Egypt against invasion by land.

Britain's strategic strength in the Mediterranean first showed deterioration in the First Great War, when German submarines took heavy toll of Allied shipping using the inland sea. After that war the increasing range and power of land-based artillery suggested that, while Gibraltar might remain impregnable against direct assault, it was no longer a safe naval base in the event of a hostile Spain. Because of its central position, beyond the range of coastal artillery, Malta was developed as the principal British naval base in the Mediterranean.

Italy's rise under Mussolini and her development of bombing aircraft altered the strategic position of Great Britain in the Mediterranean considerably. From bases on the Italian mainland, the Dodecanese Is., and Pantellaria, Italian bombers, submarines, and surface craft could render extremely dangerous the passage of British shipping through the Sicilian channel and adjacent waters, and threatened the security of Malta. The construction by Mussolini of a motor road along the 1,100 m. of seaboard from Tunisia to the Egyptian frontier, and his maintenance of a large and mobile army in Libya, became a potential threat to the security of Egypt; and operations of Italian mechanised columns in the suppression of tribal revolts showed that the desert was no longer impassable.

#### The Second Great War

When war broke out in Sept., 1939, Great Britain and France had a good margin of strategic advantage in the Mediterranean; a considerable British fleet was based on Gibraltar, Malta, and Alexandria, while a large part of the French navy was concentrated at bases on both sides of the western Mediterranean. Italy through her seizure of Albania (*q.v.*), had complete control of the Adriatic.

With the defeat of France and the entry of Italy into the war in June, 1940, Italy's formidable naval forces were ranged against the R.N., deprived not only of the aid of the French fleet, but also of the use of French bases in the Mediterranean; while French armies in Syria, Tunisia, Algeria, and Morocco, remaining under Vichy control, were lost to the British cause.

Immediately after her declaration of war, Italy opened a submarine campaign which resulted in the sinking of a considerable number of British ships. How-

ever, the Italians, despite their numerical superiority, preferred to preserve their cruisers and battleships. The R.N. made up for its weakness by an aggressive policy of seeking out Italian warships and bringing them to action.

The first surface action was on July 9, 1940, when a British squadron made contact with Italian battleships and cruisers E. of Malta; an enemy cruiser and a battleship were damaged before the Italians found refuge under their shore batteries. Ten days later the Italian cruiser Bartolomeo Colleoni (*q.v.*) was sunk by the Australian cruiser Sydney.

#### Struggle by Sea and Air

But it was Axis air power, particularly when it passed under the operational control of the Luftwaffe, that was the most serious threat to the British Mediterranean position. On June 11, 1940, Italian aircraft made their first raid on Malta, beginning an air siege that was to last for over two years. British routes through the Mediterranean were severed, and even naval communication between the bases at Gibraltar, Malta, and Alexandria became hazardous.

On Oct. 28, 1940, Italy attacked Greece (*q.v.*), and the R.N. and the R.A.F., coming to the support of the Greek navy and to ensure a flow of supplies and reinforcements to the Greek army, established air and naval bases in Greece and on Crete. The increase in British strategic naval and air power resulted in the offensive that captured Benghazi, Feb. 6, 1941.

Italy concentrated her main fleet at Taranto to protect the Adriatic. On Nov. 11, 1940, 19 torpedo-carrying aircraft from the carriers *Illustrious* and *Ark Royal* (*q.v.*) attacked the anchored warships and put three battleships and two cruisers out of action.

Early in 1941, the Luftwaffe virtually replaced the Regia Aeronautica, and air attacks on British ships, especially by dive-bombing, greatly increased; while Italian submarines, officered by Germans, intensified underwater attack.

An Allied naval bombardment of Genoa, Feb. 9, 1941, seriously disorganized for a time Axis supplies to N. Africa. At the same time, a concentrated air attack on a large British convoy to Greece was beaten off, though the cruiser *Southampton* was sunk and the carrier *Illustrious* badly damaged.

On March 27, 1941, Adm. Cunningham, C.-in-C. British Mediterranean fleet, received reports from air reconnaissance that a consider-



able Italian fleet was making for Crete. Putting to sea from Alexandria, he made contact with the enemy off Matapan (*q.v.*), and in the subsequent action sank three cruisers and two destroyers, and damaged one battleship. Matapan was a signal victory for the R.N., but while the British fleet had been drawn off by the Italian sortie, the enemy had moved a large convoy from Italy to N. Africa which enabled the Axis armies to force the British back to the Egyptian frontier once more, and the R.N. was confronted with the further heavy task of supplying the British garrison left behind at Tobruk.

On April 6, 1941, German armoured divisions invaded Greece and Yugoslavia. Within three weeks the Allies had to evacuate the Greek mainland, an operation completed under cover of the R.N. on May 1. A gallant stand was made on Crete, but this, too, was evacuated May 28–June 1 under naval cover for the loss of three cruisers and four destroyers.

#### The Turning Point

Throughout the rest of 1941, the British position in the Mediterranean gradually worsened. On Nov. 14 the carrier *Ark Royal* was torpedoed and sunk, to be followed by the Australian cruiser *Sydney* six days later. On the 24th the cruiser *Dunedin* was lost, on the 25th the battleship *Barham*; shortly afterwards the *Queen Elizabeth* was damaged. After the Japanese attack on Malaya, British naval ships were transferred from the Mediterranean to the Far East, and at one period the heaviest British naval force in the Mediterranean consisted of three cruisers.

By continuing its aggressive policy, however, the R.N. concealed its weakness. British destroyers and submarines, the R.A.F. and Fleet Air Arm between them, despite the cover provided by enemy aircraft based on Crete, destroyed at least half the Axis transports and supply ships for N. Africa; some 40 British submarines were lost in these operations. Nevertheless the Axis was able to build up and maintain in N. Africa an army of 150,000 men.

But the British managed to retain air and naval control over the S.E. Mediterranean, though by June, 1942, the British armies in N. Africa had been forced back a second time to the Egyptian frontier, Tobruk had been lost, and the maintenance of Malta imposed a constant drain on ships, aircraft, and men. The central Mediterranean was almost untenable even

for British naval craft. The evil effects of this situation became apparent politically in the attitude of Spain, Turkey, and Vichy France.

Then came the decisive British victory at Alamein and the Anglo-U.S. landings in French N. Africa. When the 8th army captured Tripoli, the Mediterranean, from Gibraltar to Alexandria, was virtually closed to Axis ships, and the German armies in N. Africa were trapped. Now in complete command of the air, Allied aircraft were able to prevent all but a few of the enemy being flown out, and on May 12, 1943, the last enemy forces in N. Africa surrendered. Malta immediately became an advanced base, Algiers becoming the main Allied base for Mediterranean operations until this was transferred to Italy, June 30, 1944. After the 8th army entered Tunis, by arrangements made at Casablanca in Jan., 1943, the command was reorganized, with Gen. Eisenhower supreme *c.-in-c.* of all Allied forces, Gen. Alexander as his deputy, in charge of ground operations, Air Marshal Tedder, as air *c.-in-c.*, and Sir Andrew Cunningham as *c.-in-c.* Mediterranean naval forces. Pantellaria (*q.v.*) surrendered to the Allies on June 11, and Lampedusa (*q.v.*) the next day; and on July 10 Allied troops landed on Sicily with little air or naval interference from the enemy. Italy capitulated unconditionally\* to the Allies on Sept. 3, and on the 10th the surrendered Italian fleet reached Malta. On Sept. 3 also the Allies invaded Italy, thus securing their first foothold on the European mainland. Corsica was liberated between Sept. 13 and Oct. 4; and the Germans evacuated Sardinia, Sept. 18, but they did not, as the Allies had hoped, evacuate Italy. Instead they turned their former ally's country into a battleground over which the longest drawn-out and one of the most destructive campaigns of the war was fought. In the Mediterranean basin, however, despite such setbacks as the occupation by the Germans of the Dodecanese (*q.v.*), the Allies now had supremacy in the Mediterranean; a supremacy that made possible the landing on the French Riviera against negligible opposition except on land in Aug., 1944. See Crete; Eighth Army; Gibraltar; Greece, Campaign in; Italy, Cam-

paign in; Malta in the Second Great War; North Africa Campaigns; Royal Navy; Second Great War, etc.

**Mediterranean Stages.** In geology, two subdivisions of the Miocene. The first Mediterranean stage resulted in the marine deposits on the floor of the great Hungarian Sea, and comprises the first Miocene period. During the second stage, corresponding to the third Miocene period, the Hungarian plain was again covered by the sea. Between these stages the plain was covered by a series of salt lakes. See Miocene.

**Medjerda.** Tunisian river. It rises near Khamissa, between Tebessa and Suk-Ahras in Algeria, and flows about 300 m. eastwards. It enters Tunisia through wild gorges and falls into the sea through the salt lake at Porto Farina. It is much too rapid to be navigable. Its valley was the scene of violent fighting during the Second Great War. See North Africa campaign.

**Medlar** (*Mespilus germanica*).

Hardy tree, member of the family Rosaceae. It is a native of Greece, Persia, and Asia Minor, and is found wild in Britain occasionally, though it is not indigenous. As a wild tree it has spiny branches, but in orchards the spines disappear. The lance-shaped leaves are downy on the underside, and the solitary white flowers are 1½ in. across, with woolly calyx. These appear



Medlar. Fruit and leaves of this hardy tree

in May or June, and give place to the globular green fruit, which has the depressed top marked out by the persistent calyx-lobes. It has a sub-acid flavour. It thrives in any ordinary moist soil. The fruit should be stored in a cool room to "blet" until it is brown and on the verge of decomposition. It is useful for flavouring purposes and for making jellies. Medlars are propagated by budding or grafting on pear or quince stocks.

**Medmenham.** Parish and village of Bucks, England. It is 3 m. S.W. of Marlow. A Cistercian abbey was founded here in 1204. On the site a residence was built, where, in the 18th cent. Sir Francis Dashwood established a mock order of Franciscans, notorious as the Hell Fire Club. Medmenham was a photographic interpretation centre of the R.A.F. in the Second Great War. *Pron.* Mednam.



**Médoc.** Dist. of France, W. of the Gironde estuary. The chief subdivision of the Gironde viticultural region, it produces little white wine, but yields some of the most famous varieties of red Bordeaux. Vineyards in the parishes of Pauillac, Margaux, St. Julien, etc., give the Médoc wines their specific names.

**Medulla.** Biological term applied to the marrow of the bones, especially the spinal cord. It is also used to describe the central nuclei of organs such as the kidney, and, in botany, to the pith of stems, roots, and other parts of plants which are constructed in layers. The medulla oblongata is the lowest part of the brain, containing the nuclei of cranial nerves, which govern such vital functions of the body as respiration and the movements of the heart.

**Medum** or **MEYDUM.** Ancient necropolis on the left bank of the Nile, 40 m. upstream from Cairo, Upper Egypt. It contains the oldest true pyramid, originally a seven-staged mastaba, attributed to Cheops' predecessor Sneferu. Mastaba-tombs of IVth dynasty officials yielded sculptured scenes; that of Rahotep and his wife Nefert incomparable funerary statues; that of Atet a fresco of geese, now at Cairo. *Pron.* Maydoom.

**Medusa.** In Greek mythology, one of the three Gorgons. *See* Celin, B.; Gorgon; Perseus.

**Medusa.** Name applied to many types of jelly-fish (*q.v.*) which assume the form of free-swimming bells or parachutes. They are marine animals, and vary in size from microscopic forms to bells measuring over 6 ft. in diameter. Many species occur round the British coasts, but the finest are restricted to the tropics. Fossil remains of medusae are rare on account of their structure, but some have been found in Cambrian and Jurassic rocks. These remains are nearly always in the form of impressions or casts. *See* Coelenterata.

**Medway.** River of England. It rises in three headstreams, two in Sussex and one in Surrey, in the Weald, and flows generally N.E. through Kent to the mouth of the Thames, which it enters by a wide estuary. Tonbridge, Maidstone, Rochester, and Chatham are on its banks, and large vessels can ascend to Rochester. Sheerness stands at the E. entrance to the estuary. Its length is 70 m., including 12 m. of estuary. The river preserves a curious distinction in nomenclature, those born on the right bank

being known as men of Kent, those on the left as Kentish men.

**Mee, ARTHUR** (1875-1943). British journalist and author.



Arthur Mee, British journalist

Born at Stapleford, Notts, July 21, 1875, and educated there, he became in 1891 a junior reporter on the Nottingham Daily Express then edited by J. A. (later Sir John) Hammerton. At 20 he was editor of the Nottingham Evening News. He moved to London, edited Black and White, 1901-03, and was active as a free-lance. Lord Northcliffe made him literary editor of the Daily Mail, 1903-05; and then with the Harmsworth Self-Educator began the series of instructional books for which he is chiefly remembered. In 1908 he began the editing of the work with which his name is chiefly associated, The Children's Encyclopedia (*q.v.*), which was strikingly successful and was translated into French, Italian, Arabic, Spanish, Chinese, and other languages, selling millions of sets. Working on the same lines, Mee next developed My Magazine (first called The New Children's Encyclopedia, then The Children's Magazine). A feature of this was a supplement called the Little Paper, which in 1919 was established as a separate publication, The Children's Newspaper. He collaborated with Sir John Hammerton in the editing of some earlier publications, including The World's Great Books and series on natural history and popular science, and the life of Jesus. His last work was The King's England, a series of guides to the English counties. He died May 27, 1943. His life is related in Child of Wonder, Sir J. Hammerton, 1947.

**Meer, JAN VAN DER** (1628-91). Dutch painter. Born at Haarlem, he was a pupil of Jacob de Wet, visited Italy when young with Lieven van der Schuur, and painted landscapes with cattle and figures. He died at Haarlem. Vermeer (*q.v.*) was also named van der Meer.

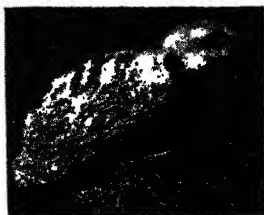
**Meerane.** Town of E. Germany, in Saxony. It is situated 21 m. W. of Chemnitz and 38 m. S. of

Leipzig. The chief building was a church, dating mainly from the 13th century. The town manufactured woollen goods and textiles of other kinds, also machinery.

**Meeraugen Spitze.** Peak of the High Tatra Mts. in Central Europe, alt. 8,212 ft. It is situated near the boundary of Poland and Czecho-Slovakia, 4 m. N.W. of the Franz-Josephs or Gerlsdorfer Spitze, the culminating point in the range. It is one of the most celebrated view points in a picturesque region of peaks and lakes. To the N.W. at the foot of a sharp slope lies the lake Meerauge.

**Meerkat** (Dutch, sea cat) or **SURICATE** (*Rhizaena*). A carnivorous mammal related to the mongoose and civet. It is about 14 ins. in length, including the tail,

and its soft fur is of a greyish colour. Its sharp nose and remarkably long claws are two of its distinguishing characteristics. It is very common in Cape Colony, where it lives in burrows in the sand. Although a member of the carnivora it lives mainly on bulbs



Meerkat, a bulb-eating mammal related to the mongoose  
W. S. Berridge, F.Z.S.

which grow in the sand. It is in favour in South Africa as a pet.

**Meerschamm, OR SEPIOLITE.** Earthy or fibrous mineral, a hydrated magnesium silicate,  $2\text{MgO} \cdot 3\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ . It is apparently a mixture of amorphous material (meerschamm) and fibrous crystals (sepiolite) and is white, greyish, or yellowish in colour. It occurs in irregular masses derived from serpentine (Asia Minor), and in siliceous veins (New Mexico); it is found in quantity also in Spain, Morocco, and the Grecian Archipelago. It is originally soft and floats on water when dry. The industrial treatment is to soak it first in tallow and then in wax before it is fashioned into pipe bowls, etc., and polished. It is occasionally used as a building stone and was formerly used as a substitute for soap in North Africa.

**Meerut.** Division and district of India, in the Uttar union. The division comprises the N. half of the Ganges-Jumna doab, and a Himalayan area in Saharanpur and Dehra Dun. The dist. is in the middle of the division to the N.E. of Delhi. Irrigation is necessary for a quarter of the area; the chief crops are wheat, barley, and sugarcane. Area, div., 9,230 sq. m.;

dist., 2,344 sq. m. Pop. div., 6,716,451; dist., 1,596,582.

**Meerut.** Town of India, in the Uttar union. An ancient city situated N.E. of Delhi almost midway between the Ganges and the Jumna, it had lapsed into a ruinous condition until it became a garrison and military headquarters. It contains 62 mosques and 60 temples, and is the seat of a college; the Jama Masjid dates from 1019. S. John's church, dating from 1821, was the first erected in N. India. The mutiny of 1857 broke out here. Pop. 169,290.

**Meeting.** A gathering of people. One of the most important constitutional rights is the right of public meeting, i.e. the right of persons to assemble so long as they do not commit a breach of the law. A meeting must not be held on private property without official permission. There is no general rule that meetings in a public street are illegal, but they must not amount to a nuisance, i.e. traffic must not be interfered with. An assembly becomes unlawful if its object is the commission of a crime or if it causes reasonable persons to apprehend a breach of the peace. By the Public Meeting Act, 1908, disorderly conduct at a meeting is a crime, and under the Public Order Act, 1936, a police officer may at the request of the chairman ask an offender for his name and address and, if he refuses or there is reasonable suspicion that he is not giving his true name and address, he may be arrested. By this last Act, the use of political uniforms in public places or at public meetings is forbidden without a permit as is offensive conduct or the possession of offensive weapons at public meetings or processions. A borough or urban district council or, in London, the police may, with the consent of the Home Secretary, forbid meetings for a period not exceeding 3 months.

During the Second Great War the home secretary had power to prohibit meetings of certain organizations where there was a danger that the organization might be used for purposes prejudicial to the defence of the realm.

**Megacycle.** Term in wireless telephony denoting a million cycles. It is also used as a contraction for megacycle per second.

**Megalesia.** Roman festival. Instituted in honour of Rhea Cybelē, the Great Mother (Gr. *megalē mētēr*) of the gods, in 204 B.C., when a black stone, supposed to represent her, was brought from

Pessinus in Phrygia, it was celebrated April 4-10, some days before the festival of Ceres (Cerealia). The Galli or priests of Cybelē marched in procession through the streets of Rome, singing and asking alms for the goddess, and games were held on the Palatine. The festival, celebrated by patrician women, which in imperial times became more orientalised and orgiastic, was kept up until the 5th century A.D.

**Megalithic** (Gr. *megas*, great; *lithos*, stone). Term denoting a homogeneous class of primitive stone monuments, their builders, and their associated culture. The problems presented by their distribution have been marked by keen controversy, and are not solved.

It is common ground that these monuments did not arise in different localities and among different peoples through independent efforts of the mind, but are ultimately due to a single originating impulse. It would also appear that the first impetus to massive stone architecture was given by the invention of metal-working, even when stone tools continued in general use, as in the pyramids of Egypt. Knowledge of these great achievements was disseminated slowly by migration and trade, and it is significant that the megalithic regions in Europe and N. Africa are not only accessible from the sea, but may be linked together by a track coincident with that which marks the early quest for gold and the baser metals. Megalithic remains are rare in east-central Europe, E. England, and other regions deficient in metallic mines, at least in antiquity.

No general agreement has been reached as to whether the dolmen, deemed to mark the beginning of megalithic building, originated in N. Africa, W. Asia, or Europe. One view is that this culture spread westward across N. Africa and thence through Spain and Portugal to Brittany, Britain, Holland, and Scandinavia, other paths being traced into Syria, the Caucasus, and across the Urals. But, whatever the route may have been, the homogeneity of the structural form and attendant features is such that the racial relationship of the builders, or those who directed the operations, may be regarded as a reasonable explanation.

The occurrence of similar structures in other parts of the world, admittedly later in time, has resulted in attempts to elucidate their organic relationship to the early megalithic civilization. An

interesting theory has been propounded which, although lacking general acceptance, claims to be the most coherent synthesis yet suggested of many facts otherwise unexplained. It points out that a dominant part was played from the outset by Aegean maritime enterprise, which began before 1500 B.C. From the 9th century onward new impulses were imparted by improvements in ocean navigation due to the general use of iron tools, and by the growing luxury of the civilized world. Africa was circumnavigated, and the exploitation of Indian mines was attended by a sudden outburst of megalithic building. This, it is maintained, diffused eastward to the Malay Archipelago, China, Korea, and Japan, subsequently reaching the Pacific in the Carolines, Marquesas, Tahiti, and Easter Island. One migratory wave seems to have found its termination in a fanwise extension from Central America through Mexico to the mound-building region; another culminated in the massive monolithic construction and affiliated culture of the Peruvian highlands.

#### Helio-lithic Culture

For this later culture, associated with a complex of customs discernible only in germ in the early megalithic phase, Brockwell proposed the distinguishing term helio-lithic which was later used extensively by Perry and Dexter. It includes such uses as mummification, carved stone idols, a homogeneous deluge-legend, sun-worship and serpent-worship, conch trumpets, circumcision and other mutilations, tattooing and skull-deformation, the couvade, terraced cultivation, arbitrary methods of boat-building, linen-weaving, traffic in shell-purple, pearls, and gems, certain games, and a peculiar calendar system. Some of these ideas were perhaps derived from Ethiopian survivals of discarded Egyptian usages, some from Babylonian and other Asiatic practices; hence their absence from megalithic Europe. According to the theory under consideration they were picked up and engrafted upon primitive megalithism by the intrepid mariners to whom mankind owes the most widespread cultural migration of the ancient world. See Archaeology; Dolmen; Stone Age; Stone Monuments.

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**Megalomania** (Gr. *megas*, great; *mania*, madness). Delusion of greatness; an erroneous and exaggerated idea of one's own importance in the matter of social position, worldly possessions, bodily and mental powers. Thus, persons imagine themselves to be kings, generals, millionaires, prophets, or endowed with divine powers. Such ideas are frequently accompanied by other mental disturbances, and are characteristic of general paralysis of the insane and the manic phases of manic-depressive insanity. Unlike other classes of maniacs, megalomaniacs are merry and gay for much of the time, though trouble ensues if they meet other patients with the same delusion, since these may be regarded as rivals, traitors, impersonators, etc.

**Megalopolis.** City of Arcadia, ancient Greece. Founded by Epaminondas in 371 B.C., it became a prosperous place, but was captured and destroyed by the Spartans in 222. It was one of the chief cities of the Achaean League (q.v.). Considerable excavations have been made, including that of the site of the theatre, the largest in Greece.

**Megalosaurus** (Gr. *megas*, great; *sauros*, lizard). An extinct fossil reptile found in the Jurassic and Cretaceous deposits of Europe, part of Asia, and N. America. The reptile was a large carnivorous dinosaur, 15-20 ft. in length, possessing formidable teeth and a long, heavy tail. The megalosaurus had only small forefeet, but large hind legs, and toes with strong claws. See Dinosaur.

**Megaphone** (Gr. *megas*, great, *phônê*, voice). Appliance for magnifying or collecting sound. One form is a speaking trumpet, used largely at sea, for enabling the voice to be heard at a distance. It consists of a hollow cone of papier mâché, fibre, etc., fitted at the smaller end with a mouthpiece. Another is a hearing-trumpet, de-

vised by Edison, for use by deaf persons, or to enable ordinary sounds to be heard at a distance; and a third is a device for enabling persons to converse from a distance. This comprises two large funnel-shaped receivers for collecting the sound waves, which are conducted to the ear by flexible tubes, and commonly fitted with speaking-trumpets. See Sound.

**Megara.** City of ancient Greece. It was situated opposite the island of Salamis, 1 m. from the sea and about 30 m. E.N.E. of Corinth. The capital of the small district of Megaris, it became important early in Greek history, and founded the flourishing colonies of Chalcedon, Byzantium, and the Sicilian Megara. It was for some time a member of the Athenian alliance, but the connexion ceased when the pro-Athenian democratic government gave place to an oligarchy, 441 B.C. During the Peloponnesian war Megara sided with Sparta. Theognis, the poet, was a native.

The small modern town of Megara lies in the same site. Pop. 8,500. It was the centre of an area from which British Imperial troops were evacuated at the end of April, 1941, after which it remained in German occupation until the German withdrawal from Greece in 1944. See Greece: Second Great War.

**Megatherium** (Gr. *megas*, great; *thêrion*, wild beast). Large extinct mammal, whose fossil re-



Megatherium. Giant ground sloth of the Pleistocene age  
Amer. Mus. Nat. Hist.

mains are found in Pleistocene deposits of S. America. One of the Edentata, allied to the anteaters and sloths, it was about 20 ft. in length, and fed upon small twigs and leaves of trees. When feeding, it supported its huge bulk on its hind legs and tail, the forearms being chiefly used for procuring food. The megatherium was one of the earliest fossil mammals to receive scientific attention, a skeleton being found in 1789 near Buenos Aires. See Fossil.

**Meghna.** River of Assam and E. Bengal. In Sylhet the river Barak rises near the mountainous border of Burma; it splits into the Surma and Kusiya, which in turn join to form the Meghna. The latter, flowing into the Bay of Bengal, has a tidal bore, making navigation dangerous.

**Megiddo.** Locality in Palestine, in the plain of Esdraelon. Sisera was defeated near by: Solomon restored the fortifications; and it was the scene of the deaths of Ahaziah and Josiah. The 1st Viscount Allenby took his title of Megiddo from this place which he captured on Sept. 19, 1918. See Armageddon.

**Megohm.** In electricity, a measurement of resistance equivalent to 1,000,000 ohms. See Ohm.

**Megrims.** Disease of horses. It is caused by interference with the blood supply to the brain. The horse staggers, throws up its head, and usually falls unconscious. Underfeeding and overworking are associated with the condition, but so are overfeeding and underworking. Harness horses seem most liable to attacks, possibly because of the pressure of the collar. The underlying cause is unknown and no treatment has been found.

**Mehadia.** Town of Rumania. It is 15 m. by rly. N. of Orsova, near the W. end of the Transylvanian Alps. The baths, frequently called the Baths of Hercules, with a temperature of 117°-132° F., were known to the Romans.

**Mehemet Ali** (1769-1849). Pasha of Egypt. Born at Kavala of an Albanian family, he distinguished himself in Egypt against Napoleon in 1799 and in 1805 obtained recognition as pasha of Egypt. At Cairo, in 1811, he massacred the Mamelukes, subdued the Wahabis, obtained possession of Mecca and Medina in 1818, and then sent his son Ibrahim Pasha to the Sudan, to extend Egyptian rule over those regions.

In 1824 the sultan called upon Mehemet for help against the Greeks, promising him Syria as a reward. The promise, however, was not fulfilled, so Mehemet seized Syria by force, and secured a good part of the rest of Asia Minor. The Turks, attempting to regain it, were repulsed, but Mehemet gave way when a fleet of British



Mehemet Ali,  
Pasha of Egypt



Megaphone. Simple form, as used for giving directions at a distance

and other vessels appeared. Eventually a compromise was arranged, by which Mehemet was made hereditary pasha of Egypt and governor of the Sudan. He died Aug. 2, 1849. See Egypt.

**Meighen**, ARTHUR (b. 1874). Canadian statesman. Born June 16, 1874, in Perth co., Ontario, he graduated at Toronto, was for a time a teacher, and afterwards a barrister. He entered the dominion house of commons in 1908. A Conservative in politics, he became solicitor-general in 1913. In 1917 Meighen entered Borden's coalition cabinet as secretary of state and minister of mines. In a few months, however, he was made minister of the interior, and in 1920 succeeded Sir Robert as premier. He owed his selection to his skill as a debater, and to his following among the Conservatives of the western provinces. Defeated in 1921, he resigned, but was again premier, July-Sept., 1926. Later he held the position of leader of the government in the senate and was leader of the Conservative party during 1941-42.

**Meiktila**. District and town of Burma. The district occupies the depression E. of the Pegu Mts. and S. of Mandalay div. It is part of the comparatively dry area of Central Burma, with an annual rainfall of 38 ins. It is crossed by the rly. from Rangoon to Mandalay; rice and oil seeds are the principal crops. The town, about 80 m. S. of Mandalay, is on the road and rly. S.E. from Myingyan on the Irawadi. The Meiktila lake, an old Burmese work, covers 4 sq. m. and is divided by the rly. into N. and S. lake. It irrigates 40,000 acres. Area, dist., 2,183 sq. m. Pop., dist., 344,025; town, 8,700.

Meiktila was occupied by Japanese troops in April, 1942. The town was retaken Feb. 28, 1945, in a surprise dash eastwards across the Irawadi by the 17th Indian div.; the main Meiktila airfield was secured at the end of March.

**Meilhac**, HENRI (1831-97). French dramatist. He was born in Paris, Feb. 21, 1831, and during

1861-81 collaborated with Ludovic Halévy in nearly 50 plays, including many librettos for Offenbach's operas (e.g. *La Belle Hélène*). Afterwards, in association

with other writers, he produced some 25 more pieces, of which *Frou-Frou* and *La Grande Duchesse* are specially notable. He died in Paris, July 6, 1897.

**Meiningen**. A town of Thuringia, Germany. It was from 1680 to 1918 capital of the duchy of Saxe-Meiningen.

It is situated on the river Merra 43 m. by rly. N.W. of Coburg. It won international fame under Duke George II who, late in the 19th century, trained and directed a group of actors which took a prominent part in the development of the German theatre. A theatrical school is still one of the town's main features, apart from its palace Elisabethenburg (1682), which contains great collections of works of art, coins, etc., remnants of a monastery of 1239, libraries, museums, and schools. As a town it dates back to the year 982. Economically unimportant, it had a pop. in 1935 of 21,035.

**Mein Kampf** (Ger., *My Struggle*). Book by Adolf Hitler, in which he laid down the principles of National Socialism. He began it, with the help of Rudolph Hess, in April, 1924, while imprisoned in the fortress of Landsberg-am-Lech for his part in the Munich *putsch*. After his release he wrote the second vol., the whole work covering some thousand pages. It describes accurately the *Weltanschauung* of Nazism, with its emotional-ethical-intellectual basis and outlines the methods by which the Nazis would seize power in Germany and the way in which they would use that power at home and abroad, including their plans for foreign conquests. The style is turgid and rhetorical, but its influence was tremendous. It became a sort of bible of National Socialism, and millions of copies were sold; after Hitler's advent to power, a copy was presented to every bridal couple. It was said that the royalties from its sale were the sole source of Hitler's income. The first English trans. of the full text was published 1939, though abridged editions appeared earlier.

**Meiosis** (Gr., reduction). In literary composition, a figure of speech which underestimates or belittles. Frequently this intends, and produces, humorous effect. Litotes has a similar meaning.

**Meiosis** (Gr., reduction). The occurrence of two divisions of a reproductive cell accompanied by only one reduplication of its chromosomes. This leads to a reduction of the number of chromosomes in the cell by half. Whereas in mitosis (*q.v.*) the chromosomes reduplicate before the cell division, which distributes one set to each daughter cell, in meiosis cell division takes place once during the reduplication and again at its completion. Chromosomes (*q.v.*) acquire the capacity to take up certain stains during cell division. At this time the genes in the chromosomes appear to attract each other in a very particular way. Each gene attracts, and attracts only, its homologue on that similar chromosome which was derived from the animal's other parent. In mitosis this does not happen because the attraction is, as it were, "used up" in the apposition of replicas to each other. In meiosis, as there are no replicas to begin with, the members of the two sets of chromosomes become attached to each other along their lengths. While they are so associated they reduplicate.

Chromosomes appear to have an essentially spiral internal structure. While the two members of an homologous pair are attached side by side in meiosis they lose some of their internal spirals and this leads to their becoming relationally coiled round each other. This can be very clearly shown by taking two pieces of knitting wool and increasing their internal spirals by twisting each more tightly than it was twisted when first picked up. If these two pieces of wool are now firmly held touching along their length and then allowed to untwist internally by letting go of one end of the pair they will in fact coil relationally around each other.

The reduplication of the chromosomes, which takes place when they are relationally coiled, is itself spiral so that the two replicas are relationally coiled round each other as well. When the replication is complete the attraction of gene for gene is used up in the attraction of replica for replica, so that the original homologous whole, now double, chromosomes are no longer held together by anything except their relational coiling. This relational coiling is undone by force—by the force that separates the centromeres shown by small circles in the



Meiningen arms



Henri Meilhac,  
French dramatist

fig., which, in each chromosome, become attached to the spindle (q.v.).

This forcible separation of the homologous chromosomes, each consisting of a couple of replicas, when relationally coiled leads to breakages, the physical basis of crossing over (q.v.), and the formation of chiasmata, X-shaped figures. After the homologous chromosomes, whole, or broken as to one of their moieties and repaired by a bit of a moiety of a homologue, have been separated by the completion of the first division of meiosis, a second division separates the whole or broken and repaired replicas, often called chromatids. After this second division each of the four resulting cells has one whole or broken and repaired chromatid of each possible kind present in the species, instead of two chromosomes of each kind present in the species. Meiosis has therefore taken place. *Consult* M. J. D. White, *The Chromosomes*, 2nd ed., rev. 1942; *The Evolution of Genetic Systems*, C. D. Darlington, 1939.

**Meiringen.** A large village of Switzerland, in the canton of Berne. It stands on the river Aar, 7½ m. by rly. S.E. of Brienz. The chief village of the Hasli-Thal, and the principal station on the Brunig rly., it is a popular tourist centre. Close to the Reichenbach Fall and the gorges of the Aar and the Alpbach, it has an English church and many hotels. It is noted for its wood-carving.

**Meissen.** Town and district of Germany, in Saxony. The town is on the left bank of the Elbe, and possesses the huge Albrechtsburg castle (1471-85) and a fine Gothic cathedral (13th-14th cent., renovated 1912) as well as other remnants going back to the



Meissen arms

10th cent. when the "burggraves of Misnia" were set up against Slavonic neighbours. Meissen is a romantic town in a beautiful hilly setting; the churches of S. Afra (1208), Our Lady (15th century), S. Francis (1266), and S. Nicholas (1390), and the town hall (15th century) and pharmacy (16th century) are other remnants of its old glory. Its world fame, however, derives from its china, often identified with the similar Dresden product. It was at Meissen, however, that Johan

Frederick Böttger produced the first china for Augustus the Strong, and it has maintained its reputation from 1701, when the first porcelain was made in the Albrechtsburg. Other industries concern textiles, furniture, machinery, stoves, and chemical products. Meissen was a R.C. bishopric from 968 to 1581. In 1945 it came under Russian occupation, and its industries suffered heavy losses by dismantling and transfer to Russia. Its pre-war pop. was 46,992. *See* China; Saxony.

**Meissonier, JEAN LOUIS ERNEST** (1815-91). French painter. Born at Lyons, Feb. 21, 1815, he became pupil of Julien Pothier and Léon Cogniet. Influenced by the 17th century Dutch painters, he excelled in dramatic and costume works. His first important work was *The Little Messenger*, 1836. In 1855 his picture *La Rixe* won him fame. His chief pictures include *The Cavalry Charge*, *The Amused Cavalier*, *Soldiers Gambling*, and *Cuirassiers*. He also painted a few portraits. The Wallace Collection has a good many examples of his work, such as *A Sentinel*; time of Louis XIII, 1851; *The Guard Room*, 1857; *The Lost Game*, 1858; *Napoleon I and his Staff*, 1868; He died in Paris, Jan. 31, 1891.



J. L. E. Meissonier, French painter

**Meistersinger** or **MASTERSINGERS.** Members of guilds of musicians and poets, founded in Germany from the 14th to 16th centuries. The earlier Minnesingers were connected with the courts, but on the decline of feudalism the cultivation of the art of singing passed down to the burgher class. Heinrich von Meissen, called *Frauenlob*, one of the last of the Minnesinger, seems to have been a connecting link between

the two kinds of guild, for he was the founder of the first company of Meistersinger at Mainz in 1311. Tyll Eulenspiegel, Brandt, and Hans Sachs were among the most distinguished of later followers of the cult. At Ulm the Meistersinger survived till 1839. Wagner revived popular interest in the Meistersinger, and immortalised Hans Sachs by his opera *Die Meistersinger von Nürnberg*, 1867. In this he faithfully mirrors the degeneracy due to rules which were intended to safeguard the purity of the arts of lyrical poetry and music, but which have become outworn and now merely paralyse. The most famous aria in the opera is the *Prize Song* (tenor).

**Mejillones del Sur.** Seaport of Chile, in the prov. of Antofagasta. It is 38 m. direct N. of Antofagasta, with which it is connected by rly. It has a large and well-protected harbour, and is a port for the Caracoles silver mines. Nearby there are large guano deposits. It is the terminus of a rly. to Bolivia, to which it belonged up to 1882. *Mejillones del Norte*, a port in the prov. of Tarapaca, 25 m. from Iquique, was ceded to Chile by Peru in 1883. Nitrate and tin are shipped. Pop. 3,000.

**Meker Burner.** A type of gas burner similar to the famous Bunsen burner, but said to give rather more heat. It has numerous applications in the chemical laboratory. The name is that of the inventor.

**Meklong.** Seaport of Siam. At the mouth of the river of the same name, it is 45 m. S.W. of Bangkok. The river drains the S.W. of Siam, and enters the sea at the W. end of the Menam delta in the Gulf of Siam. The town has a large export trade in salt. Pop. 16,000.

**Mekong.** River of S.E. Asia. It rises in the Tibetan plateau, and flows S. through China and Indo-China. In its upper reaches it flows with torrential speed through deep, rocky gorges. It forms for part of its course the boundary



Meissen, Saxony. View across the Elbe, showing the old town and bridge with Albrechtsburg and the cathedral on right



between Siam and Indo-China, and empties itself in the China Sea. Total length, 2,800 m.

**Melampus.** In Greek legend, the first prophet and physician among mankind. As he lay sleeping two serpents which he had reared licked his ears, thus enabling him to interpret the language of beasts and birds. Having been cast into prison, he learned from the wood-worms that the prison would soon fall, and having told this to Iphicles, the king who had imprisoned him, he received from him many favours. He rendered Iphicles other services by means of his supernatural gifts, and eventually became king of a third of Argos. Melampus learnt the art of medicine from Apollo.

**Melancholia.** A disease of the mind characterised by marked depression. Melancholia may be exhibited alone, but sometimes it is associated with periods of mania (*q.v.*), forming one phase of the disease known as manic-depressive insanity. It may also be exhibited as a symptom in other forms of mental disorder, *e.g.* dementia or general paralysis of the insane. The cause of the condition is not known. Hereditary influences play an important part, and sepsis of the sinuses of the head, such as may occur after acute influenza, are a predisposing factor. Some psychologists hold that melancholia represents a turning from life and a regression to the state found in earliest childhood in which there is a minimum of mental effort and all interest is centred in oneself. This regression is caused by a gross exaggeration of the unconscious guilt which normally accompanies losses and failures.

The types may be divided into simple and active melancholia and melancholia with stupor. In simple melancholia the patient is markedly depressed, lethargic in his movements, and sits listlessly, speaking slowly, or weeping and bemoaning his fate. Delusions are frequent, and often of a religious character, the patient, for example, believing that he has committed the unpardonable sin, and is actually in hell. Others believe that they have lost important bodily organs, and will state that they have no brain or bowels. Sometimes the delusions are of a sexual nature. There is considerable risk of suicide in cases of severe melancholia.

In active melancholia, similar mental symptoms are exhibited, but in addition the patient is restless and agitated. In melancholia

with stupor, the patient will sit motionless for hours together, apparently oblivious of his surroundings, but if left alone he may seize the opportunity of committing suicide. The patient may refuse food, necessitating artificial feeding. Each case must be considered on its own merits as regards management. Treatment includes general hygienic measures, fresh air, exercise and rest. Hypnotics must be given to combat insomnia and restlessness. In some types of melancholia considerable success has followed the use of convulsant electric therapy. A strong electric current is passed through the brain, probably upon several occasions, the result often being a dramatic improvement. The delicate operation of frontal leucotomy is often successful; a knife is inserted through a point in the skull, disconnecting the fibres between the front and hind brain. Consult Mourning and Melancholia, S. Freud, in vol. 4 of *Collected Papers*.

**Melamine Plastics.** Type of synthetic material. Melamine, discovered over a century ago by Liebig, belongs to the urea family, and reacts with formaldehyde to produce a soluble and fusible resin which is water-clear and colourless, hygroscopic, and miscible with water and water-alcohol mixtures. Under the application of controlled heat these resins are cured, *i.e.* converted to the infusible and insoluble stage, and by contrast with others of the thermo-hardening class, this change takes place over a wide range of acidity and basicity. The unconverted resins react with alcohols to yield resins which are soluble in a wide range of organic solvents. The outstanding characteristics of melamine plastics in comparison with aminoplastics are their increased water resistance and non-cracking properties. This resulted in their increased use during the Second Great War both as compression moulded units and also as laminates.

Moulding powders have been developed with mineral and asbestos fillers for special usage, such as handles of medical instruments which have to be repeatedly sterilized. Moulding compositions in pearl and a range of bright and stable colours were also produced in combination with alpha cellulose fillers. This has already found application, particularly in America, in the production of moulded tableware which needs scratch and stain resistance. Melamine laminates have found wide

application in the production of resistant table tops, nameplates, and translucent panels. Melamine resins have also been applied as hot-set waterproof "glues" for ply and laminated wood, giving products of remarkable glue-line strength in tension and shear, with good water and fungi resistance. The addition of 2 to 5 p.c. of melamine to urea resins has largely eliminated joint failures. Similar additions have also imparted boiling water resistance to urea resin bonding compositions.

The hydrophobic properties of melamine resins have also been used in the production of paper which retains strength when wet. Approximately 3 p.c. of a melamine resin acid colloid is incorporated in paper at the beater stage to yield a paper which is over 60 p.c. as strong when wet as when dry. Paper so treated has been used for maps, towing, blueprints, currency, and heavy duty packaging, and other applications from which paper had been hitherto excluded.

At the present time melamine resins are mainly produced in America, where the necessary raw materials are readily available at competitive prices. Only limited quantities are produced in Great Britain. American materials are sold under trade names.

**Melanchthon, PHILIP** (1497-1560). German reformer. His name was Schwarzert, *i.e.* black earth, which was rendered into Greek as Melanchthon. He was born at Bretten, in the Palatinate, Feb. 16, 1497, and educated at Heidelberg and Tübingen. In 1518 he was appointed professor of Greek at Wittenberg, where he came into contact with Luther, became a Protestant, and three years later published his *Commonplaces of Theological Matters*.

The Augsburg Confession was drawn up by him in 1530, and he became recognized as the leading scholar of the German Reformation. He took part in the conferences of Worms and Ratisbon, and proved himself a formidable opponent to the R.C. representatives. On the death of Luther, he became the dominant spirit in the movement. A great humanist and a man of serene and conciliatory temper, he did much to moderate the violence of the extreme partisans. He was the author of many books, including theological and controversial treatises, commentaries on the classical authors, and works on history and philosophy. See Luther: Reformation; Re-



naissance; *consult* Works, ed. Bretschneider and Bindsell, in Corpus Reformatum, 28 vols., 1834-60; Lives, B. Saunders, 1897; G. Wilson, 1897; M. Alien or Ally, F. Hildebrandt, 1946.

**Melanesia** (Gr. *melas*, black; *nēsos*, island). Collective name of a number of groups of islands in the Pacific Ocean. They lie between the equator and the Tropic of Capricorn, and between Papua and the Fiji Islands. The chief groups are the Solomon, Admiralty, Loyalty, Bismarck, Santa Cruz, New Hebrides, etc. They were politically apportioned among Great Britain, France, and Ger-

become more frequent since the middle of the 19th century, in association with industrialisation. According to Ford, industrial melanism, as this phenomenon is called, depends on hereditary factors each exhibiting complete or partial dominance. Black areas of black and white guinea-pigs are due to the presence of melanin granules in the epidermis of the black areas, in what may be called dendritic cells. If black skin from a spotted guinea-pig is grafted to a non-pigmented area, the superficial epidermis, but not the hairs, of the white skin become black; conversely, white grafts transplanted to black areas become

under Marchesi in Paris, and made her first appearance in opera at Brussels, 1887, taking the name of Melba as a tribute to her native city. The following year she made her début at Covent Garden, where she scored an immediate success.

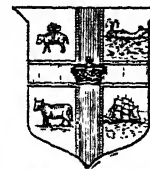


Dame Nellie Melba,  
Australian singer  
Soprano

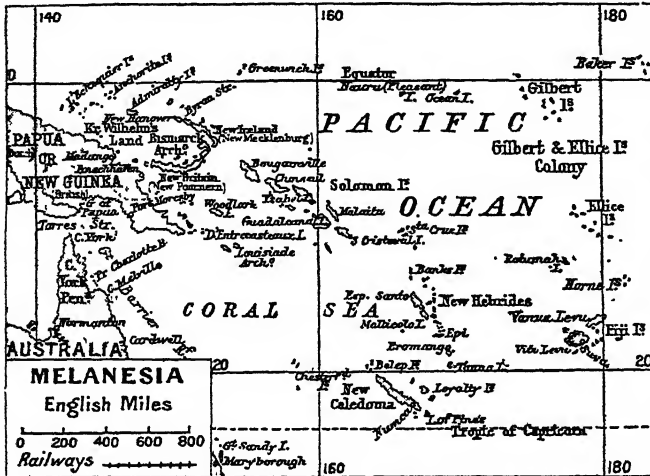
A soprano of great sweetness and brilliant execution, her voice had extraordinary flexibility and perfect sense of restraint. She became world-famous, appearing regularly in London, Paris, and New York. In 1894 she created the part of Nedda in *I Pagliacci*, and her most famous operatic characters included Lucia, Gilda, Mimi, and Violetta. After 1902 she made repeated world tours, dividing her interests between England and Australia. Created D.B.E. in 1918, she retired in 1926, and died Feb. 23, 1931. Her reminiscences, *Melodies and Memories* appeared in 1925. *Consult* biographies by A. Murphy, 1909; P. Colson, 1932.

**Melbourne.** Parish and town, Derbyshire, England, 7 m. S.E. of Derby. It has a Norman church built about 1090. The Dutch gardens of Melbourne Hall were laid out in 1720. Boots and shoes and silk goods are manufactured. It is also noted for its market gardens. Pop. 4,000.

**Melbourne.** Capital of Victoria, Australia. It is situated at the N. of Port Phillip, in Bourke co., on the banks of the river Yarra, which flows into Hobson's Bay, an inlet of Port Phillip. Hobson's Bay has anchorage for 800 vessels, with a varying depth of from 3 to 5 fathoms, while three-fourths of the 800 sq. m. of Port Phillip Bay are similarly available. The Yarra, a stream 100 m. long, is navigable to the heart of the city for vessels of 22 ft. draught, and is tidal to Richmond, the Coode canal shortening the distance from its mouth to the city by more than 1 m. Port Melbourne, formerly Sandridge, is 2½ m. S.W. of the city by road, and has steamboat and rly. connexion with Williamstown, at the opposite side of Hobson's Bay.



Melbourne arms



Melanesia. Map of the Eastern Pacific, showing the principal groups of islands

many, but the German possessions were captured in the First Great War, and are now administered by Australia and New Zealand.

**Melanesian.** Term denoting the dominant ethnic stock in Melanesia. Formed by the intermingling of an aboriginal black, woolly-haired population with an immigrant Indonesian stock previously modified by proto-Malayan blood and culture, it is of medium to tall stature, chocolate to copper-coloured, often wavy-haired, and usually long-headed. Fishing and agriculture are practised.

**Melanins.** Chemical term applied to the pigments of the body, usually found in the epidermal organs, such as hair.

**Melanism.** Term used in zoology to describe the presence of black coloration in animals normally of a lighter colour. This phenomenon occurs in moths, e.g. Boarmia, and among many species there can be no doubt that it has

progressively pigmented. This process of infective melanin spread does not entail the wholesale replacement of the tissues, for a claw from the white area grafted to a black portion of the sole of the foot changes colour without any loss of form.

**Melaphyre.** In geology, a general term for altered basic lavas such as basalts. Melaphyres are soft rocks, decomposed by the passage of steam or hot water. In colour they are usually reddish or green.

**Melba, DAME NELLIE** (1859-1931). Australian singer. Born Helen Porter Mitchell, she was the daughter of a building contractor, and was born at Burnley, Melbourne, Australia, May 19, 1859. She sang as a child in Melbourne, but owing to parental opposition it was not until after her marriage to Charles Armstrong in 1882 that she became a professional singer. She studied



Melbourne, Australia. Map of the environs of the city, showing also Geelong harbour and the bay of Port Phillip

The city proper covers an area of about 8,000 acres, and there are extensive suburbs, some of which have city rank. The principal streets in the city, named after Australian notabilities, are 1 m. long and 99 ft. wide, and run at right angles to each other. The public buildings, among the finest of any city of equal size in the world, include the houses of par-

liament, built 1855-91, which, pending the building of Canberra (*q.v.*), houses the parliament of the Commonwealth; Exhibition Building, 1881; Trades Hall; and town hall, with an assembly hall holding 2,500 people and a magnificent organ.

Other buildings include the G.P.O., custom house, mint, 1872; public library, with over 300,000

volumes; national art gallery, technological museum, law courts, treasury, university, hospitals, observatory, etc. The banks, stores, and other business premises are on a handsome scale, and there are several markets. The ecclesiastical buildings include S. Patrick's Cathedral, R.C., the Anglican cathedral of S. Paul, the Scots, Independent, and a number of other churches. There are theatres, an opera house, and music and con-

cert halls, zoological and botanical gardens, and parks.

Rly. and air facilities afford communication with all the other state capitals, and electric suburban services are supplemented by electric tramways. The holiday resorts include South Melbourne, St. Kilda, Brighton, Sandringham, Beaumaris, Mentone, Ascendale, and Heidelberg. The racecourses include Flemington, where the Melbourne Cup race is run. A great annual aquatic festival is held at Henley-on-Yarra.

Apart from the shipping, there are foundries, flour and woollen mills, boot and clothing factories, potteries, soap works, tan yards, and wool-washing works; and gold, meat, wool, fruit, etc., are exported. Except for periodical hot N. winds, the climate is fine; mean temperature, 58°; average rainfall, 25.62 ins. A metropolitan board of works was established in 1891. Three systems of water-supply provide 90,000,000 galls. daily.

First occupied by whites in 1835, Melbourne was in 1837 named after Lord Melbourne at the suggestion of Sir R. Bourke when he was governor of New South Wales. In 1836 it consisted of 13 meagre buildings. By 1841 the pop. had increased to 11,000. Incorporated Aug. 12, 1842, it was made an episcopal see Aug. 3, 1849. When the goldfields were opened in 1851, and what was then Port Phillip province became the colony of Victoria, Melbourne was made its capital. In 1947 the pop. was 1,226,923. Centenary celebrations in 1934 included a £10,000 London-Melbourne air race. *See* Australia; Port Phillip; Victoria.

**Melbourne, UNIVERSITY OF.** Established in 1853 by the Victorian Legislature, it receives an annual subvention from the government. There are faculties of arts, science, law, medicine, dentistry, veterinary science, and of engineering, including mining and agriculture. Affiliated colleges are four residential colleges controlled by representatives of the churches and the Australian college of dentistry.

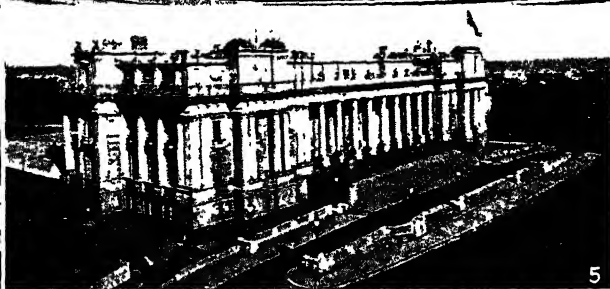
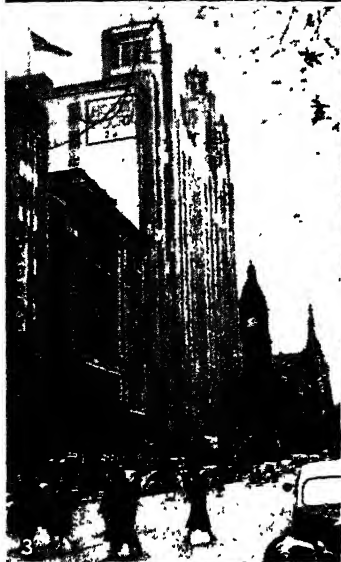
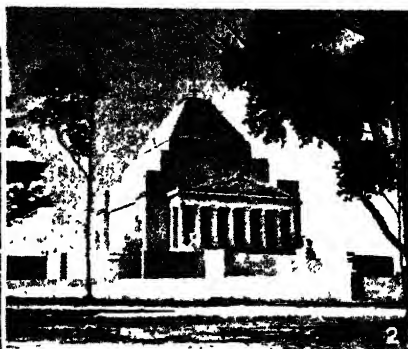
**Melbourne, WILLIAM LAMB, 2ND VISCOUNT (1779-1848).** British politician. A son of Peniston Lamb, created Viscount Melbourne in 1781, he was born March 15, 1779. Educated at Eton and Trinity College, Cambridge, he be-



Melbourne, Australia. Plan of the city proper



Melbourne University arms



1. The Botanic Gardens, from the air, showing the main lake, with factory and residential suburbs beyond. 2. The Shrine of Remembrance, Melbourne's 1914-18 war memorial in St. Kilda Road. 3. Collins Street, the tree-lined chief thoroughfare of the city. 4. The Public

Library and National Gallery of Art and Industry 5. Parliament House of the State of Victoria. 6. Station Pier (top) and Princes Pier, Port Melbourne. Each pier is served by eight railway tracks, together they can accommodate eight of the largest vessels

**MELBOURNE: NOTABLE FEATURES OF THE CAPITAL CITY OF VICTORIA, AUSTRALIA**

came a barrister. In 1805 he married Lady Caroline, the eccentric daughter of the earl of Bessborough, but the two soon separated. In 1806 he entered

parliament as Whig M.P. for Leominster and represented a succession of constituencies until he succeeded to the peerage in 1829. For a time he supported the Tories,

and his official career began when, in 1827, he was chief secretary for Ireland under Canning, but he resigned the following year.

Having rejoined the Whigs, he entered Earl Grey's ministry as home secretary, and four years later succeeded him as prime minister. He resigned a few months later, but again became premier in April, 1835. In 1838 he resigned, but difficulties arose when Peel tried to form a ministry, and at the instance of the queen Melbourne returned. (See *Bedchamber Question*.) After defeats in the House of Commons, he finally left office in Aug., 1841. He died Nov. 24, 1848. He was a successful politician, although he lacked nearly all the qualities of a statesman, save perhaps tact. He is best known as the guide of the young Queen Victoria. His brother Frederick, British ambassador in Vienna, 1831-41, succeeded to his title, but on his death in 1853 it became extinct. *Consult* *Memoirs*, W. T. MacCullagh Torrens, 2nd ed. 1890; *Life*, B. Newman, 1930.

**Melbourne Age**, *THE*. Morning newspaper published in the capital of Victoria, Australia, and founded in 1854. An illustrated weekly, *The Leader*, intended mainly for the farming community, is issued from the same office.

**Melbourne Argus**. Morning newspaper published in the metropolis of Victoria, Australia. It was founded in 1846 and issues a half-yearly index. Its companion weekly publication, *The Australasian*, now the *Illustrated Australasian Post*, was established in 1864.

**Melchett**, ALFRED MORITZ MOND, 1ST BARON (1868-1930). British industrialist and politician. He was born at Farnworth, Lancs, Oct. 23, 1868, a son of Ludwig Mond, the scientist, and educated at Cheltenham College; S. John's College, Cambridge; and Edin-

burgh university. Mond entered the firm of Brunner, Mond and Co., and was called to the bar in 1894. Liberal M.P. for Chester (1906) and Swansea (1910), he joined the coalition government in 1916 as first commissioner of works. Mond was minister of Health 1921-22, and in 1924 was elected M.P. for Carmarthen, joining the Unionist party in 1926. He was responsible for the formation of the great combine, Imperial Chemical Industries (*q.v.*). In 1910 Mond was made a baronet and in 1928 a baron. He died Dec. 27, 1930. His son Henry (1898-1949) succeeded as 2nd baron. He was educated at Winchester, was Lib-



Lord Melchett,  
British politician  
*Russell*

eral M.P. for Isle of Ely 1923-24, and, after joining the Conservative party, represented East Toxteth 1929-30. In 1933 he reverted to the Jewish faith, and became an ardent Zionist. His son Julian (born 1925) succeeded him as 3rd baron.

**Melchites**. Word meaning followers of the king, i.e. the East Roman emperor, adopted in the 5th century as a name for the Orthodox Egyptian Christians to distinguish them from the Jacobites (*q.v.*), who supported the Monophysite heresy. They are now in union with the Church of Rome, but retain many of their traditional usages.

**Melchizedek**. A priest-king of Salem. He is described as Priest of the Most High God, and Abraham received his blessing and paid him tithes after one of his victories (Gen. 14). Salem was probably Jerusalem, and the Tell-el-Amarna tablets mention a priest-king of the place, appointed neither by his father nor his mother, who is styled Servant of the Good One. As a priest-king with high prerogatives, Melchizedek is mystically regarded in Ps. 110 and Heb. 5 and 7 as a type of the Messiah.

**Melcombe**, GEORGE BUBB DODDINGTON, BARON (1691-1762). English politician. The son of Jeremias Bubb, he took the additional name of Doddington on succeeding to the estate of his maternal uncle. In 1715 he was M.P. for Winchelsea. From 1722-54 he represented Bridgwater. He was a lord of the treasury, 1724-40, and afterwards was twice treasurer of the navy.

In 1761 he was made a baron, and he died July 28, 1762. He was a member of the Hell Fire Club. His *Diary* was published in 1784. *See* *Medmenham*.



Lord Melcombe,  
English politician

**Melcombe Regis**. Parish of Dorset, England, within the borough of Weymouth and Melcombe Regis. The first victims of the Black Death in England died here in Aug., 1348. *See* *Weymouth*.

**Meldola**, RAPHAEL (1849-1915). British chemist. Born in London and educated at the Royal School of Mines, he afterwards became assistant to Sir Edward Frankland at the Royal College of Science, and to Sir Norman Lockyer at the Solar Physics Laboratory. From 1878-85 he was chemist to a firm of aniline dye makers, and then was appointed professor of chemistry at the Finsbury Technical College, a position he held at the time of his death. Meldola discovered several important aniline colours, as naphthol blue (Meldola's blue), alkali blue, and viridine. He first prepared the photographic developer eikonogen. Two of his best known books are *Chemical Synthesis of Vital Products*, 1904; and *The Chemistry of Photography*, 1889. He died Nov. 16, 1915.

**Meldrum**, OLD. Burgh of Scotland. In Aberdeenshire, it is 16 m. N.W. of Aberdeen and has been a burgh since 1672. Cotton goods are manufactured here. About  $\frac{1}{2}$  m. to the S. lies Barra Hill, with a prehistoric fort, said to be the site of the battle between Robert Bruce and Comyn, Earl of Buchan, in 1308. Pop. 1,015.

**Meleager**. In Greek legend, a famous hero and hunter. The Fates having foretold that he should live only as long as a firebrand which was then burning should be unconsumed, his mother, Althaea, put it out, and locked it up in a chest. When Meleager grew up to manhood, the goddess Artemis offended by his father Oeneus, sent a monstrous boar to ravage the land of Aetolia. All the heroes were invited to assist in the killing of the boar, and among them came the famous huntress Atalanta. The boar was finally killed by Meleager, who gave the skin and head to Atalanta, as she had given the animal the first wound. This compliment gave offence to the other

hunters, and two brothers of Althaea endeavoured to take the trophies from Atalanta, but were killed by Meleager. Althaea threw the brand into the fire, and Meleager immediately died. See Atalanta; Calydon.

**Meleda** or **MLJET**. Southernmost of the larger of the Yugoslavian Dalmatian Islands in the Adriatic Sea. It is long, narrow, and hilly, 17 m. from Ragusa, with the harbour of Palazzo in the N.

**Melfi**. City of Italy, in the prov. of Potenza. It stands on the slopes of the volcanic peak of Monte Vulture, at an alt. of 1,590 ft., with a splendid view of the plain of Capitanata. Its old castle, founded by Robert Guiscard, was restored by the Dorias. The cathedral, consecrated in 1155, was rebuilt after the earthquake of 1851, which destroyed most of the town. Melfi trades in cereals, oil, and wine. The capital of Apulia under the Normans, its history consists of a long sequence of revolt, massacre, siege, capture, and spoliation. It suffered no damage during the Second Great War, being overrun in Sept., 1943, by Canadian forces advancing against little opposition. Pop. 15,000.

**Meli**, **GIOVANNI** (1740-1815). Sicilian poet. He was born March 4, 1740, at Palermo, educated for the medical profession, and became professor of chemistry at Palermo University in 1787, dying Dec. 10, 1815. He wrote many eclogues, odes, and epigrams, chiefly in the Sicilian dialect, and his fables gained for him the name of the Sicilian La Fontaine. A complete edition of his poems was published in 1814, and a later one, including an ode to Lord Nelson, in 1830. A revised edition was published in 1908 by A. Alfano.

**Melilite**. A complex calcium aluminium magnesium silicate occurring in basic lavas low in silica and without feldspar. It is commonly found in slags.

**Melilla**. Harbour of Morocco. On the N.E. coast, it is within the Spanish zone, and forms the main port of entry into the Rif country. It lies on the E. side of the mountainous promontory of Tres Forcas. Extensive harbour works have been undertaken by the Spanish, and narrow-gauge railways have been built through Nador to Seluan (Zeluan) and Tafersit, and to the lead mines at Afra Minas, as well as to the iron ore mined in the E. region. Melilla was acquired by Spain in 1496. Fighting took place in the Melilla zone in July, 1921, the tribesmen



Melilot. Leaves and flower-heads

inflicting a serious defeat on the Spanish troops. Pop. 60,500.

**Melilot** (*Melilotus officinalis* and *M. alba*). Herbs of the family Leguminosae, natives of Europe and Asia. The leaves are divided into three narrow, oblong, toothed leaflets. The flowers in appearance are like those of furze, but only a quarter of an inch long, drooping, in an erect one-sided spray; those of *M. officinalis* are deep-yellow, and of *M. alba* white. When dry the plants give off the odour of new mown hay.

**Méline**, **FÉLIX JULES** (1838-1925). French statesman. Born at Remiremont, Vosges, May 20, 1838, he was deputy for the Vosges from 1872 to 1903. Keenly interested in the increase of agricultural production, he founded the order of merit of agriculture, was president of the chamber 1888-89, and prime minister 1896-98. The fall of his ministry was caused partly by the Dreyfus agitation, and partly by the failure of the Government to deal with nationalist pretensions. He died Dec. 21, 1925.

**Melinite**. Name under which trinitrophenol is used as a military explosive in France. See Lyddite.

**Melitopol**.

Town of the Crimea, R.S.F.S.R., 125 m. N.N.E. of Simferopol, with which it is connected by rly. It was captured by German troops early in Oct., 1941, during the advance on Rostov. It eventually became the Germans' most important strategic position E. of the Lower Dnieper. It was recaptured by the Russians on Oct. 23, 1943, after 11 days of fighting through the streets of the town. Pop. 75,735.

**Melkart** (king of the city). Phoenician deity. He was especially worshipped in Tyre, where Hiram I, about 950 B.C., erected the great temple mentioned by Herodotus. The twin pillars facing its portal, long since destroyed, were imitated in Solomon's temple at Jerusalem. The name of the temple, "Pillars of Hercules," in Tyre, perhaps became applied symbolically to the rocks flanking the Strait of Gibraltar. Identified with Heracles, Melkart—whose name in Greek was Melicertes—was in part a sun-god, in part the patron of mariners. Jezebel, Ahab's Tyrian consort, introduced into Samaria the Melkart worship, and her daughter Athaliah encouraged it in Jerusalem.

**Melksham**. Market town of Wilts, England. It stands on the Avon, 6 m. S. of Chippenham and 98 m. by rly. from London. The chief building is the church, in which a little Norman work remains; it has a fine chapel of somewhat later date. There is a town hall. The industries include the making of cloth and flour. The town has saline springs. Market day, Tues. Pop. 3,881.

**Mellawei**, **MALLAWI**, **MELLAWI**, or **MELAWI-EL-ARISH**. Town on the Nile, 184 m. S. of Cairo by rly. Near by are the celebrated alabaster quarries of Hat Nub, with inscriptions of the IVth, VIth, and XIIth dynasties. Pop. est. 20,000.

**Melle**. Town of France, in the dept. of Deux-Sèvres, 17 m. E.S.E. of Niort. S. Hilaire, one of two 12th cent. churches has remarkable sculptures. The Romans here worked a silver-lead mine. Pop. 2,600.

**Mellifont**. Village of co. Louth, Eire. It stands on the Mattock,



Melksham, Wiltshire. S. Michael's Church, restored 1881

and is famous for the ruins of its Cistercian abbey, founded 1142.

**Mellitic Acid**. A crystalline body first discovered in 1799 by Klaproth in honey-stone, and for a long time called honey-stone acid. Mellitic acid is prepared by boiling honey-stone with ammonium car-



bonate to form ammonium mellitate, adding lead acetate, and decomposing the lead mellitate by means of sulphuretted hydrogen.

**Mellitus** (d. 624). Archbishop of Canterbury. Sent to England as a missionary by Gregory the Great, he was consecrated by Augustine, and for him King Ethelbert of Kent built S. Paul's church in London, Mellitus being the first bishop of the city. He succeeded Laurentius as primate in 619 and died April 24, 624.

**Mellon, Andrew William** (1855-1937). American financier and politician. Born in Pittsburgh,

Mar. 24, 1855,

he graduated

from the

Western Uni-

versity of

Pennsylvania

in 1873. He

became presi-

dent of the

Mellon Na-

tional Bank,

but resigned

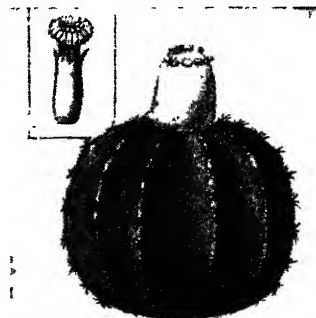
in 1921 on his

appointment as secretary of the treasury, an office he held until 1932. He played an important part in the international debt settlement after the First Great War, maintaining that, while the Allies should repay the debts incurred to the U.S.A., they should not be pressed beyond their capacity for repayment. In Feb., 1932, he became ambassador in London, but was replaced when Roosevelt became president a year later. A generous patron of music and art, he gave to the American nation a collection of paintings worth £10,000,000, and paid a further £2,000,000 towards a gallery to house them. In 1913 he founded the Mellon Institute of Industrial Research (*q.v.*). He died Aug. 27, 1937, leaving his estate, believed to be worth over £40,000,000, to the Mellon Educational and Charitable Trust.

**Mellon Institute.** The Mellon Institute of Industrial Research was established in 1913 at the University of Pittsburgh by the late Andrew W. Mellon, to provide qualified workers with facilities for the investigation of problems in pure and applied science. During the Second Great War its activities were largely switched over to researches in scientific questions bearing directly on military operations. According to a report issued after the resumption of normal work, 82 research programmes were in operation, most of them in chemistry, industrial hygiene,

metallurgy, and ceramics. The institute awards annually a number of valuable fellowships to scientists and engineers.

**Melocactus** (Melon - shaped Cactus). Genus of perennial succulent plants of the family Cactaceae.



**Melocactus.** Tropical American plant; inset, tubular flower

Natives of Mexico, Brazil, and the W. Indies, they have globular, ribbed stems, with a short central cylindrical extension upwards, which is clothed with woolly hairs and soft spines. The ridges of the swollen base bear stouter spines in clusters at regular intervals. The rosy, tubular flowers are produced at the summit of the short column. The Turk's cap (*M. communis*) is the best known species.

**Melodrama** (Gr. *melos*, song; *drama*, action). Strictly, a stage play in which appropriate music, vocal and instrumental, is introduced to heighten emotional or dramatic effect. In its original form it is said to have been first perfected in France as a natural and orderly development of opera, differing essentially from that higher form of dramatic art in that the music was accessory to, and the songs were interpolations in, spoken dialogue, whereas in opera the story is told exclusively in recitative and aria. Rousseau's *Pygmalion* (1775) is often named as the first play of the kind.

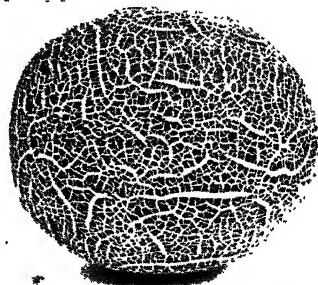
Gradually melodrama developed into a composite of sensational drama derived from tragedy and of domestic drama derived from the comedy of life. Sensational incident and sentimental appeal were variously underlined by snatches of appropriate orchestral music. Its convention requires that virtue shall ultimately triumph over vice. It relies on primitive passions shown in conflict in elemental conditions rather than on subtle analysis of character as developed in the hothouse atmosphere of artificial civilization, and on crude colouring in the presentation of

moral qualities. The figures of the melodrama are as conventional as were those of the old morality play, and the *jeune premier* or juvenile lead, the *ingénue* or innocent heroine, the heavy father, the villain, and the rustic clown or other fool who supplied the comic relief, are types as rigid as Vice and the rest. As the conventions of modern melodrama require that the figures shall need no labels round their necks to indicate the qualities they personify, so they require that nothing shall be left to the imagination in respect of the environment in which they are brought into mutual conflict.

Nevertheless, while the melodrama is comparatively easy to ridicule or to burlesque, it is a dramatic form requiring of its author considerable knowledge of human nature and great technical skill in construction. As acclimatised in England it became a notable part of the English drama in the hands of such producers as the brothers Gatti at the Adelphi Theatre, Augustus Harris and Arthur Collins at Drury Lane, and Walter Melville at The Lyceum.

**Melon** (*Cucumis melo*). Plant of the family Cucurbitaceae. It is a trailing plant, and, a native of Asia, was introduced into Great Britain about 1570. Many varieties and sizes are cultivated, the flesh being sometimes green, sometimes white, and sometimes orange. The water melon (*Citrullus vulgaris*) of the same family, but different genus, is a native of S. and tropical Africa.

The number of fruits on each plant should be limited to two, otherwise the quality and size of the fruit will suffer. Where melons are grown in a frame instead of a house the swelling fruits should have a piece of brick, tile, or other similar material placed underneath them to avoid direct contact with the soil. See Cucumber; Gourd.



**Melon.** Fruit of the cultivated variety, *Eminence*  
J. Wallis, Kew



**Meloria.** Island in the Mediterranean, 4 m. W. of Leghorn. It is known on account of two naval fights named after it. The first was fought on May 3, 1241, when a Genoese fleet under Enzo was defeated by the ships of the emperor Frederick II and those of Pisa. The second and more important was fought Aug. 6, 1284, when the Pisan fleet of over 70 galleys, commanded by the Venetian Morosini, was defeated by the Genoese, with 88 galleys under Uberto Doria. The defeat of Pisa here marked the end of her rivalry with Genoa. See Genoa; Pisa.

**Melos.** Former name for the Greek island of the Cyclades now known as Milo (*q.v.*).

**Melozzo da Forlì (1438-94).** Italian painter. Born at Forlì, June 6, 1438, he was perhaps a pupil of Piero della Francesca, visited Rome in the service of Count Girolamo Riario in 1472, and worked at Urbino, under the patronage of Federigo of Montefeltro, duke of Urbino, 1473-76. He is said to have executed some of the portraits in the palace of Urbino, several of which are in the Louvre. He died at Forlì, Nov. 8, 1494. Few of his paintings remain. His Vatican fresco Sixtus IV and his Court (c. 1476-81) may still be seen. In the Quirinal there is an Ascension of the same period, and in the inner sacristy of S. Peter's are his frescoes of The Music-making Angels, by which he is best known. See Angel.

**Melrose.** A police burgh and market town of Roxburghshire, Scotland. It stands on the S. bank of the Tweed, 37 m. S. by E. of Edinburgh on the rly. An ancient town pleasantly situated at the base of the Eildon Hills, Melrose is chiefly noted for the abbey founded in 1136 by David I, once the most magnificent edifice in Scotland, and now a splendid ruin. Destroyed by Edward II in 1322, and partly razed by fire in 1385, it was completely ruined by the Reformers in 1545. The abbey contains the remains of Alexander II and Michael Scott, the legendary magician. Scott's lines on Melrose in *The Lay of The Last Minstrel* are well known. In 1918 the abbey was presented to the nation by the duke of Buccleuch. A heart found in a leaden casket during excavations



Melrose arms



Melrose, Roxburghshire. The town as seen from Quarry Hill

in 1921 was believed to be that of Robert Bruce.

In the market place is a market cross of 1642. The town is associated with Scott, who made it the Kennaquhair of The Abbot and The Monastery. In the vicinity is Old Melrose, where S. Aidan founded a Columban monastery in the 7th century, and the Eildon tree, celebrated for Thomas the Rhymer's meeting with the queen of the fairies. On the other side of the Tweed, and connected by a suspension bridge, is Gattonside, where Sir David Brewster lived. Pop. 2,052. See Abbey.

**Melrose.** City of Massachusetts, U.S.A., in Middlesex co. Situated 7 m. N. of Boston, and served by the Boston and Maine Rly., it is chiefly a residential city. Part of Middlesex Fells, a fine state reservation of 1,800 acres, lies within its limits. Chief industry is the manufacture of "Boston Butter Beans," sold throughout the U.S.A. Settled about 1633, Melrose was incorporated in 1850, and became a city in 1900. Pop. 25,333.

**Meltham.** Urban dist. and town of the W. Riding of Yorkshire, England. It is 5 m. S.W. of Huddersfield on the rly., and has flourishing cotton and woollen industries and makes tractors. Pop. 5,000.

**Melting Point.** Temperature at which a substance becomes entirely molten or liquid. More strictly the melting point of a substance at a given pressure is the temperature at which solid and liquid are in equilibrium at that pressure. The effect of pressure on the melting point is given by the Clausius-Clapeyron equation  $\frac{dT}{dp} = \frac{T(v_l - v_s)}{LJ}$  where

$dT$  is the change in the absolute temperature  $T$  of the melting point due to a change  $dp$  in pressure,  $L$  is the latent heat of fusion (cal/gm.),  $J$  is Joule's equivalent (the mechanical equivalent of heat), and  $v_l$  and  $v_s$  are respectively the volumes of unit mass of liquid and of solid, e.g. the melting point of ice falls by  $\cdot 0072^\circ$  C. for each

atmospheric increase of pressure. At one time it was supposed that this temperature would be always constant for each pure substance, but it is now known that mere allotropic modifications—or a metal, for example—may affect the melting point. Nevertheless, the melting points of substances are so far invariable that they are universally regarded as among the physical constants of science. The melting points of metals are of particular importance in metallurgy. Some typical melting points ( $^\circ\text{C}$ ) are: Hydrogen chloride,  $-111$ ; Ammonia,  $-78$ ; Carbon dioxide,  $-57$ ; Mercury,  $-38.9$ ; Beeswax,  $62$ ; Soft Solder,  $180$ ; Tin,  $232$ ; Lead,  $327$ ; Zinc,  $419$ ; Sodium chloride,  $801$ ; Brass,  $900$ ; Copper,  $1083$ ; Steel,  $1400$ ; Platinum,  $1773$ ; Tungsten,  $3380$ .

**Melton.** Woollen or woollen and cotton cloth, plain woven. The best meltons are all-wool, and in the course of their finishing are well milled or fulled, and their surface, after being brushed up, is closely sheared. The thread structure of the fabric is concealed, and a fine but not bright surface results. Some of the cheapest mixed woollen fabrics for women's dress are described as meltons, but do not possess the characteristics of the original heavy weight melton suitable for overcoats.

**Melton Mowbray.** Market town and urban dist. of Leicestershire. It is situated 14 m. N.E. of

Leicester and 102 m. by rly. from London. Melton Mowbray stands where the little rivers, Eye and Wreak, join. The chief building is the beautiful church of S. Mary, with a fine central tower, partly early English, enlarged in the reign of Elizabeth. The town has cattle markets, and is famous for its pork pies and cheese. It is also known as a hunting centre, being in the midst of the Quorn country. In Feb.,



Melton Mowbray arms

1644, the Parliamentarians were defeated here by the Royalists. It is mentioned in Domesday Book as



Melton Mowbray, Leicestershire. Parish church of S. Mary  
Valentine

Medeltune, the second name being in consequence of its association with the great family of Mowbray. Market day, Tues. Pop. 12,000.

**Melun.** Town of France, in the dept. of Seine-et-Marne. It occupies an island in the middle of the Seine, and has spread on both banks, 27 m. S. E. of Paris. There are medieval churches, a fine town hall in the Renaissance style; and ruins of a royal palace.



Melun arms

It was captured by Henry V in 1420, and held by the English for 10 years. Textiles, leather, and pottery are manufactured. Pop. 17,573.

**Melusina.** The heroine of a medieval French romance, and the legendary ancestress of the house of Lusignan. She was to all appearance a beautiful young woman and married a young nobleman, Raymond of Lusignan, on condition that he should never see her on a Saturday. One day the husband spied upon her at the time of taboo, and saw that she was then half-serpent in form. She flew away in the form of a dragon, to reappear before the death of each of her descendants. The story is a variant of a folk-tale based on the idea of taboo, and found in many parts of the world. The earliest forms of the Melusina legend have been published by the Early English Text Society. The story is dealt with in S. Baring Gould's *Curious Myths of the Middle Ages*, new ed. 1897. See *Psyché*; *Taboo*.

**Melville, Viscount.** Scottish title borne by the family of Dundas since 1802. Henry Dundas, the politician, was the first holder; he was succeeded by his son Robert,

who became president of the board of control in 1807. From 1812-27, and again, 1828-30, he was in the Tory ministry as first lord of the admiralty. Melville Sound was named after him. His son, Henry, the 3rd viscount, became a general in the army, after having taken a prominent part in the Sikh War. The 5th viscount (born March 5, 1909) succeeded to the title in 1935. The family seat is Melville Castle, Lasswade, Midlothian. The earldom of Melville is borne with that of Leven. See Leven and Melville, Earl of.

**Melville, HENRY DUNDAS, 1ST VISCOUNT (1742-1811).** A British politician. Born and educated in Edinburgh, he became an advocate; in 1766 he was made solicitor-general for Scotland, and in 1775 lord advocate. In 1774 Melville entered parliament as M.P. for Midlothian, and in 1783 Pitt chose him as treasurer of the navy. In 1791 he was made home secretary, in 1794 secretary at war, and during 1804-05 was first lord of the admiralty. In 1806 he was impeached for misappropriating public money while treasurer of the navy, but was acquitted. He died May 28, 1811. Consult *Lives*, H. Furber, 1931; C. Matheson, 1933.

**Melville OR MELVILL, ANDREW (1545-1622).** Scottish reformer. He was born at Baldovie, Angus, Aug. 1, 1545, and was educated at St. Andrews, Paris, and Poitiers. In 1574 he became principal of Glasgow College, and later of S. Mary's College, St. Andrews. He was a very strong Presbyterian, and his outspoken utterances more than once brought him into trouble. In 1597 he was deprived of the rectorship of St. Andrews, and nine years later was summoned to London by James I to give an account of certain irregular proceedings at Aberdeen. He then proved so contumacious that he was imprisoned for five years in the Tower. On his release, in 1611,

the king having forbidden his return to Scotland, he went to France, and became professor of biblical theology at Sedan, where he died. A violent controversialist, but generous and patriotic, Melville was one of the chief organizers of the Scottish Church.

**Melville, HERMAN (1819-91).** American author. He was born in New York City, Aug. 1, 1819, of Scottish descent. At the age of 17 he went to sea and crossed the Atlantic as a foremast man. On his return he acted as school-master during 1837-40, and on Jan. 1, 1841, went to sea again in a Pacific whaling vessel. In the following year, when at the Marquesas Islands, he ran away from his ship and for four months was a captive among the cannibal natives of Nukuhewa. After being rescued he served as a clerk for a time in Honolulu, and returned to Boston in 1844.

In 1846 he published the first of his books, *Typee: a Peep at Polynesian Life*. This received a cordial welcome both in America and England, as a fascinating narrative of life in the Pacific. His later books included *Omoo*, 1847, and a *Voyage Thither*, 1849; *Redburn, His First Voyage*, 1849; *White Jacket, or The World in a Man-of-War*, 1850; and his most famous book, *Moby Dick, or The White Whale*, 1851. He died in New York, Sept. 27, 1891. Consult H. M.: *The Tragedy of a Mind*, W. E. Sedgwick, 1945.

**Melville, SIR JAMES (1535-1617).** Scottish writer. Sent to France as page to Mary Queen of Scots, he was engaged in the unsuccessful negotiations for the marriage of John Casimir, second son of the elector palatine, to Queen Elizabeth, and of the archduke Charles of Austria to Mary Queen of Scots. He died Nov. 13, 1617. His *Memoirs*, the MS. of which was discovered in 1660, are of great value in studying the history of the period.

**Melville, JAMES (1556-1614).** A Scottish reformer. Born near Montrose, July 26, 1556, a nephew of Andrew Melville, he was educated at Glasgow university, where he became a tutor. In 1580 he was appointed professor of Oriental languages at St. Andrews. Nine years later he was moderator of



Herman Melville,  
American author



Melville  
After Raeburn

the general assembly of the Church of Scotland; and he took a leading part in the ecclesiastical disputes of his day. He died at Berwick-on-Tweed, Jan. 13, 1614.

**Melville Bay.** Opening of Baffin Bay, on the N.W. coast of Greenland. It lies between Cape York on the N. and Wilcox Head on the S., contains numerous islands, and is usually blocked with floating ice.

**Melville Island.** Large island of British N. America. In the Arctic Ocean, between Bathurst and Prince Patrick islands, it is deeply indented. Its maximum length is 210 m., and width about 130 m. It was discovered by Parry, who wintered here 1819-20.

**Melville Peninsula.** N.E. projection from the Canadian mainland. It is separated from Baffin Island on the E. by Fox Channel and on the N. by Fury and Hecla Strait. To the W. is Committee Bay, while to the S. are Frozen Strait and Lyon Inlet, besides other bays. The chief settlements are Pingitkalik and Agwisewiwik, which are situated on the N.E. coast. Its length is 265 m., and average breadth 110 m.

**Melville Sound.** Large opening of the Arctic Ocean. Situated between Melville Island on the N. and Victoria Island on the S., it communicates with Beaufort Sea through Banks Channel or Macure Strait, and with the ocean through Byam Martin Channel. Its length is 240 m., and width 140 m.

**Member of Parliament.** Person elected by popular franchise to represent a constituency in the house of commons. Any adult British subject by birth or naturalisation is entitled to stand as a parliamentary candidate, except if a 'peer of the realm, a minister of the established Church, a member of the regular armed forces or the civil service, an undischarged bankrupt, a convicted criminal, or a lunatic.

A prospective candidate must be nominated and seconded by two parliamentary electors in the constituency, his nomination paper being signed by eight others. He must deposit with the returning officer on the eve of nomination day £150 in notes. Unless the candidate receives one-eighth of the total votes cast at the election, this deposit is forfeit to the Treasury. Unsuccessful candidates who get a sufficient quota of the votes have their deposits returned immediately, but elected candidates only when they have taken the oath in parliament. Candidates are required to have agents for

election expenses, and to ensure that these expenses are kept within certain legal limits; under the 1948 Act the limit was £450, plus 2d. per elector in counties and 1½d. in boroughs. This includes the agent's fee, clerical assistance, printing, stationery, rent of committee room and halls for meetings, and a sum for personal expenses. Usually half the outlay is met from party funds, but the Labour party bears the whole cost.

Since 1946 an M.P. has been paid £1,000 a year and receives free railway warrants when travelling between the house of commons and his constituency. A pension scheme for indigent ex-M.P.s is in force, all members contributing £12 per annum. Members of parliament are exempt from jury service and compulsory service in the armed forces, and are also exempted from attending as witnesses upon subpoena. They cannot be prosecuted for libel arising out of any statements made in debate, but such statements may be ruled out of order by the Speaker. Freedom from arrest by the civil or military power was once a prized privilege, but it is now confined to civil causes. Where applicable, freedom from arrest applies only to forty days after the prorogation of parliament and forty days before the next meeting.

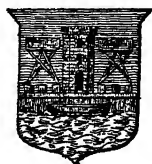
Members who offend against the rules or privileges of the house of commons are dealt with by the house itself. Such breaches of privilege consist of disobedience to the orders of the house; assaults on or insults to members or libels on them; and interference with the officers of the house. After a minor offence the guilty member may be suspended for a sitting or longer period, but where the offence is serious the member may be expelled from parliament.

While the house is in session, a member must not enter it wearing an overcoat or carrying an umbrella. He must not display any papers or books not directly concerned with the business under discussion. Smoking is not permitted in the house, division lobbies, or corridors; food must not be taken in side; but there is no restriction on beverages. No member in debate may mention

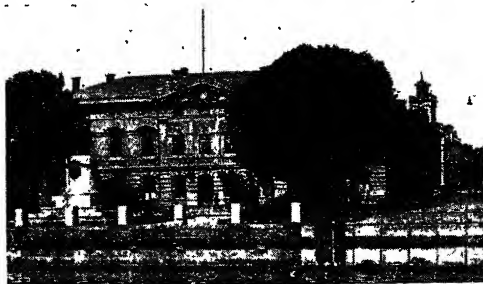
another's name; he must refer to the hon. member for such-and-such a constituency. Ministers are addressed by the name of the office each holds, e.g. the secretary of state for war.

Once a member has taken the oath (one of allegiance to the crown), there is no obligation on him to attend sittings of the house. No duly elected M.P. may resign his seat. If he wishes to cease representing his constituency, he must apply for an office of profit under the crown, and so vacate his seat by the provisions of the Act of Settlement (1707). The usual practice is to apply for the stewardship of the Chiltern Hundreds (g.v.) or of the manors of Poynings or Northstead, or the escheatorship of Munster. The seat is thereupon declared vacant under the Place Act of 1742, and a writ is issued for a by-election to be held. When an M.P. dies, the Speaker issues a writ for a by-election. Should the member die within the precincts of the house, his body cannot be removed without the consent of the king's coroner, as the houses of parliament rank as a royal palace. See Commons, House of; Lords, House of; Parliament.

**Memel** (Lithuanian, Klaipėda). Town and seaport of the Lithuanian S.S.R. It stands on the Baltic Sea at the mouth of the Dange, which flows into the E. end of the Kurisches Haff. It is 90 m. to the N.N.E. of Kaliningrad (Königsberg), and possesses iron foundries, ship-building yards, and chemical and soap factories. Normally it has a transit trade in timber and grain. The town was founded in 1252 by the Teutonic Order and soon became a trading centre, joining the Hanseatic League. In the 17th century, after a troubled period,



Memel arms



Memel. The Rathaus in this Baltic town and port

it was for some time in the possession of Sweden, and in 1757 and again in 1813 was occupied by Russian troops. Before the First Great War the town, with a strip of territory E. of the river, belonged to Germany, the hinterland being Russian.

On March 17, 1915, during the First Great War, a Russian detachment occupied Memel after a bombardment, but evacuated it soon on the approach of superior German forces. Intermittent fighting occurred in the neighbourhood throughout April. Under the Versailles treaty Memel was detached from Germany to be made autonomous on the model of Danzig; but was annexed by Lithuania early in 1923. This annexation was recognized by the League of Nations, and the Memel statute provided for a large measure of self-government. There was constant friction between the German and the Lithuanian communities, and the government granted many concessions to the former in an attempt to forestall their secession. But in 1938 the Germans had a large majority in the diet, and on March 22, 1939, Hitler presented Lithuania with an ultimatum for the surrender of Memel and the adjoining territory, which were reincorporated in Germany, Lithuania retaining a free zone in the port. During the Second Great War the Russians took Memel by storm Jan. 28, 1945. It was reincorporated in the Lithuanian S.S.R.

**Memento Mori** (Lat. remember (you have) to die). Name given to a ring or article of personal adornment fashioned as a reminder of the brevity of life and the certainty of death. A device of medieval origin, it extended to inscriptions and decorations of dwelling-houses, and was adapted to memorial and mourning rings, a death's head or human skeleton of white enamel being attached to the ring by a swivel mounting. Luther wore a gold finger ring with a small death's head in enamel inscribed with the words *Mors saepe cogita* (Think often of death); and round the setting, *O Mors, ero mors tua* (O death, I will be thy death), part of an antiphon. Mary Stuart had a similar ring. Shakespeare has several references to the memento mori, e.g. in *Love's Labour's Lost*, v. 2, where Biron compares the countenances of Holofernes to "a death's face in a ring," and in *King Henry IV*, part 1, iii, 3, where Falstaff declares that he will make as good

use of Bardolph's face "as many a man doth of a death's head or a memento mori."

**Memlinc** OR **MEMLING**, **HANS** (c. 1430-94). Flemish painter. Born at Mümling, near Mainz, or at Memlynck, near Alkmaar, he was apprenticed to a painter in Cologne or Mainz before going to Bruges about 1465. He became a master painter there in 1467, and there he painted Nicolas Spinelli (Royal Museum, Antwerp) and the Donne triptych (Chatsworth). In 1479 he painted *The Adoration of the Kings* in S. John's Hospital, Bruges, and in 1480 the large *Christ the Light of the World* (Munich). The altar-piece, S. Christopher (Bruges Museum), was painted in 1484. In 1489 he completed the famous shrine of S. Ursula at Bruges. His altar-piece in Lübeck cathedral was finished 1491. He died at Bruges, Aug. 11, 1494. See Bruges; Flemish School of Painting.



**Hans Memlinc**  
Supposed self-portrait  
of the Flemish artist,  
at Frankfurt



**Memminger arm:**

Memminger arm: 15th cent.), church of the Knights of the Cross (1480), town hall (1589), and guild houses. There are textile and brewing industries. In 1945 the town was placed in the American zone of Germany. Pop. 14,849.

**Memnon**. In Greek mythology, son of Tithonus and Eos (Dawn). He came to help the Trojans against the Greeks in the last period of the war. Antilochus, son of Nestor, fell before him, but he was in turn killed by Achilles. Memnon was a beautiful youth and beloved of the gods. When he met Achilles in the fatal battle, Zeus weighed the fates of the two heroes in the scales, and that of Memnon sank. According to tradition Memnon came from Ethiopia, and it was doubtless due to this tradition that the colossal statue near Thebes, which produced a musical note at sunrise, was supposed to

represent him, though really the statue of the Egyptian king, Amenhotep III.

**Memoirs**. Literary composition occupying a place midway between the diary and autobiography. Relying largely upon the former for substantiation of facts and dates, it differs in having greater literary finish; it differs from autobiography in its intention of being less a conscious self-portrait than a series of sketches of persons and events with which the narrator has been associated.

As a specific form of literature memoirs made their first appearance in France, the genius of whose people finds in it particularly happy expression. Memoirs, says Demogot, are the flower, history the ripe fruit, of a people, and he points to the fact that the whole 16th century produced but one historian in France, while in the second half of it alone no fewer than 26 writers left permanent memoirs of the events of which they were contemporaries and part. One of the earliest of these was Marguerite de Valois. Other notable names include Madame de Sevigné, Saint-Simon, Madame de Staël, and Madame de Genlis.

No such list of memoirs can be shown by the literature of any other people, however rich in autobiographies, diaries, or reminiscences, set down in their old age by cultivated men and women of the world. Italy's supreme example is Casanova. Germany has no classics in this medium. Greville, and perhaps Lucy Hutchinson, and the Chevalier de Johnstone practically exhaust the list of names that England can produce, for the memoirs of the count de Grammont, though written by Anthony Hamilton, are as foreign as his brother-in-law who is their shameless hero, and of the so-called memoirs that have appeared since the last decade of the 19th century, few have the quality of permanence. See *Autobiography*; *Literature*.

**Memorial Day**. An American public holiday. It was first observed in 1869 to do honour to the memory of Northern soldiers and sailors who fell in the Civil War, and has been held annually ever since on May 30 in the states that fought on the Union side. It now commemorates also those who lost their lives in the Spanish-American War and the two Great Wars. As part of the original celebration consisted in placing flowers on graves, the anniversary is popularly known also as Decoration Day. Southern states observe a

Confederate Memorial Day, but not on a uniform date.

**Memorial Hall.** Headquarters of the Congregational Union of England and Wales. It is situated on the E. side of Farringdon Street, London, near Ludgate Circus, on the site of the Old Fleet Prison in which were confined two noted divines, Henry Barrows and John Greenwood, for their "persistent Nonconformity." Its erection, completed in 1874, was one of the objects of the bicentenary commemoration of 1862 "to commemorate the fidelity to conscience shown by the ejected ministers of 1662, and to provide accommodation for the Congregational library and denominational societies." Various religious agencies have offices in the building, which is also the headquarters of the National Free Church Council.

**Memories and Portraits.** Vol. of essays by R. L. Stevenson, published in 1887. The essays, all but three of which first appeared in magazines, are largely autobiographical. They include some college and other memories of the author's early life and vivid studies of his father and grandfather. Among them are *Talk and Talkers*, and *A Gossip on Romance*.

**Memory** (Lat. *memoria*). The retention in the mind of experiences, ideas, and images which have once been conscious, and their automatic or voluntary recall. Physiologically memory is connected with brain tissue, for destruction of specific areas of this tissue produces amnesia. Definite processes in the nerve fibres of the brain accompany the exercise of memory, but their nature is not yet known.

If two things or events are closely connected in experience (e.g. the scent and the shape of a rose), repetition of experience of one tends to recall the other. When events follow one another in time (e.g. gong—meal) the first will generally recall the second more readily than the second will recall the first. Psychological investigation has demonstrated that no experience important to the individual passes completely from the mind, whether or not it received much attention at the time, though most or all of it will pass sooner or later beyond the power of voluntary recall. This phenomenon was first noticed early in the 18th century when an illiterate German servant girl in delirium was heard to rave in Latin, Greek, and Hebrew. Doctors were able to trace the sentences she spoke to



Memorial Hall, Headquarters, in Farringdon Street, London, of the Congregational Union of England and Wales

books used by a learned rabbi whose servant she had been, and who had been accustomed to read aloud to himself in the course of his studies. Such unconscious retention is now recognized as general, for the buried material can be brought back by hypnosis and in the course of psycho-analysis. In normal life, forgotten occurrences are often enough recalled by some external stimulus such as a scent or a tune.

Factors which assist experience to remain within the power of voluntary recall are subjective importance (one's name and address), constant repetition (common words), and attention. Many memories, therefore, are hardly thought of as such, for they rise to the mind as soon as they are needed without apparent effort. This is true also of "muscular memory" (e.g. playing an instrument) which makes it possible for complicated processes to be repeated without conscious thought. Although close attention given to a happening is one of the things which make it easy to remember, it is not a decisive factor (e.g. a lesson over which great pains have been taken may not be remembered). Nor is repetition decisive, for a single event like a bomb explosion may be remembered in every detail, whereas a succession of such events tend to become confused with one another, and only their common features will remain in mind.

Forgetting is of three kinds—a gradual fading out, and losses of memory due to suppression or to repression. In repression thoughts, etc., can be driven deliberately from the conscious mind until it

has formed the habit of not attending to them (e.g. thoughts of cricket during work), or they may disappear automatically and instantaneously, as when a loss of memory follows a violent shock. the cause of the mind's behaviour is the undesirable or painful character of what is blotted from consciousness. Since both suppression and repression use up energy and entail some mental conflict, they may produce a general weakening of retentive power.

The wide differences between the kinds of events that different human beings find it easy to remember are partly accounted for by this tendency to forget what causes anxiety or guilt. Another cause of such discrepancies is the direction taken by sublimation (q.v.) in the individual. Where a strong primitive impulse has found satisfaction through some particular channel (e.g. combativeness in games, sex in art or mountain-climbing) everything appertaining to the substitute gratification will be relatively easy to remember, though memory in regard to the original impulse may be poor.

Investigation of memory training has shown that (a) working the memory in one field (say Latin grammar) does not improve its performance in another; (b) in learning by heart the matter to be retained should be memorised as a whole, or in as large sections as possible, rather than piecemeal.

The false memories known as "Déjà Vu"—the impression that one has seen before something which in fact is new to one, or been in a place where one is in truth a stranger—are probably due to the fact that the sight, the place, would normally recall a previous experience of a very similar kind, but some disagreeable aspect of the first occurrence makes it impossible to remember it as it was, and all that penetrates to consciousness is the general feeling, "I have seen this—have been here—before." Consult *Psycho-Pathology of Everyday Life*, S. Freud, new ed., 1914; *Psychology of Study*, C. A. Mace, 1932.

**Memory Training.** The art of cultivating a good memory. The possibility of training the memory has been studied in successive ages from the days of Simonides of Ceos onwards, Roger Bacon, Giordano Bruno, and Leibniz being among the philosophers who devoted much attention to the subject. Recent revival of interest in the matter has produced a number of rival systems. Distinction must





Memphis, Egypt. Colossal statue of Ramses II amid the ruins (shown above) of the ancient capital of Egypt. The site is now known as Badreshen or El Badrashein

be made between systems which aim at improving memory by what may be called rational means and systems worked by mnemonics.

There are generally said to be three kinds of memorising—mechanical or sensational, depending on the grouping of ideas in a certain order by repetition of the words representing them; artificial, the deliberate association of certain ideas with certain words or symbols, i.e. by the use of ordinary mnemonics; logical, by the association of the idea with others with which it is logically connected by a thorough grasp of the idea and its implications. The last, being associated with a sound general education, is obviously the best method of memory training, though it may not yield phenomenal results.

**Memphis.** Ancient capital of Lower Egypt. Situated on the left bank of the Nile, 14 m. S. of Cairo, it was founded by Menes, the first historical king of ancient Egypt. The Greek form of the Egyptian Mennofer, good house, denoting originally Pepi I's VIth dynasty pyramid, the name appears in Hebrew as Moph (Hosea) and Noph (Isaiah). Before the time of Menes, there had been a city here called White Wall. Under the kings of various dynasties it was embellished with pyramids and palaces, and, in spite of foreign invasions and other vicissitudes, it remained an important place until the rise of Alexandria, although it was not constantly the country's capital. The Romans expressed admiration at its beautiful build-

ings, which included a temple to Ptah, the god of the city, and a number built by Ramses II. The existing monuments include the colossal statues of Ramses II. The ruins were mostly employed for building Cairo. Petrie excavated the Ptah temple, Apries' palace, XXVIth dynasty, and many workshops and dwellings, in 1909-13. See Rosetta Stone; Sak-kara; Serapeum.

**Memphis.** City and port of entry of Tennessee, the co. seat of Shelby co. The largest and the chief commercial city of Tennessee, it stands on a high bluff on the Mississippi, in the S.W. angle of the state. The city commands a wide area annually flooded; hence its name, since the Egyptian city is similarly situated on the Nile. The U.S. army engineers' flood control is directed from Memphis. In 1937 floods caused a sudden influx of 60,000 refugees into the city. Memphis was the centre of an epidemic of yellow fever in 1878, when 25,000 people fled the city in a fortnight. More than one-third of the pop. is negro, but the death-rate of negroes in the city exceeds the birth-rate, the coloured pop. being maintained by influx from the countryside. The rlys. and two steamboat lines serve the city; it is one of the world's greatest cotton ports and has a large export trade in cotton oil cake, used as cattle food. The annual trade of the port is \$250,000,000.

Memphis occupies the site of a fort built in 1739. The town was founded in 1819, incorporated

1826, and became a city in 1849. Pop. 292,942.

**Memphremagog.** Lake of Quebec, Canada. It measures 30 m. by 4 m. and the S. end, in Vermont, is a noted tourist resort. It drains by the Magog into the river St. Francis at Sherbrooke.

**Mena.** Traditional founder of the 1st dynasty of Egyptian kings. The Menes of Herodotus, he was born at Thinis, near Abydos. He was reputed to have erected at Memphis a defensive frontier between Upper and Lower Egypt, the crowns of which he united. Abydos and Nagada have yielded royal tombs of that age, notably of Narmer and Aha, whose relationship to Mena awaits further investigation.

**Menaechmi.** Name of a comedy by Plautus. The plot turns upon the extraordinary resemblance of two twin brothers, sons of a Syracusan merchant. Having been separated from childhood, after many years they meet at Epidamnus, where one of them has settled, and where the other has landed during his search for his long-lost brother. Each is mistaken for the other by the inhabitants and by the Epidamnian's relatives, which gives rise to highly amusing incidents. The Comedy of Errors (*q.v.*) of Shakespeare is based upon the Menaechmi of Plautus.

**Menagerie.** Collection of wild animals kept in captivity for study or exhibition. These collections originated in very early times, when monarchs brought back specimens of the larger fauna of distant lands they had conquered, to be used in displays and combats in the arena. Later monarchs often maintained private collections, one of the best known being that kept in the Tower of London until early in the 19th cent. The admittance of the public to see such collections led to the establishment of zoological gardens. Another development was in the travelling shows popular in the last half of the 19th century. Private menageries have been kept by many wealthy zoologists, e.g. the





Menaggio, Italy. Tourist resort on the W. shore of Lake Como

11th duke of Bedford, at Woburn Abbey, and the 2nd Lord Rothschild, at Tring, Herts. See Zoological Gardens.

**Menaggio.** Village and tourist resort of Italy, in Lombardy. On the W. shore of Lake Como, at the mouth of the Senagra river, it is 16 m. N.N.E. of Como, and in the prov. of that name. It is the starting place of the light rly. to Porlezza, 8 m. distant, on Lake Lugano. Pop. 2,000.

**Menahem, TRIBUTE OF.** Tribute of 1,000 silver talents—3,000,000 shekels—paid by Menahem, king of Israel, to the Assyrian king Pul (2 Kings 15). The cuneiform annals of this monarch, now generally identified with Tiglath-Pileser III, for 738 B.C. record "the tribute of Rezin of Damascus, Menahem of Samaria, Hiram of Tyre" and others. An important synchronism between Assyrian and Hebrew chronology was thereby established.

**Menai Strait.** Channel between Carnarvonshire and Anglesey, Wales, 14 m. long and from one furlong to 2 m. in breadth. It is crossed by two bridges. The Menai suspension bridge, which carries the turnpike road, was constructed by Telford and opened in 1826; it is 1,710 ft. in length and 100 ft. above high water mark. The Britannia tubular bridge was erected by Stephenson and Fairbairn and opened in 1850; it is 1,841 ft. long

and 104 ft. above high water mark, and is traversed by the rly. from Chester to Holyhead. In 1947 a plan was announced for harnessing the tidal energy of the strait by damming it at three points to create two basins.

In the strait is stationed the Conway training ship for officers of

the Merchant Navy. Menai Bridge, N.E. of the suspension bridge, is an urban dist. in Anglesey.

**Menam.** River of Siam. It rises near the N. frontier and flows almost due S. by a tortuous course of some 900 m. to the head of the Gulf of Siam. Its chief tributary, the Meping, drains the N.W. of Siam. Of its deltaic channels, the Taching is the chief and westernmost. Bangkok, the Siamese capital, is 25 m. upstream, and can be reached by vessels which are able to cross the bar at the river mouth. The river is a great national highway.

**Menander** (342–291 B.C.). Athenian comic poet, chief representative of the New Comedy. A native of Athens, belonging to a wealthy family, he was intimate with the philosophers Theophrastus and Epicurus, and learnt the art of play-writing from his uncle Alexis. He is said to have written 105 comedies, and to have gained the prize eight times. Until the 20th cent. only fragments of his works were known, but papyrus finds in Egypt brought to light more than 1,000 lines from four plays, from which an idea of his style and plots can be formed. Menander enjoyed until the Middle Ages, a high reputation, which, in the opinion of modern scholars, an examination of the fragments has failed to justify. He was especially strong in moral maxims. Terence, called

by Caesar the "half Menander," adapted four comedies from the earlier poet.

Menander's *Mirror* was the general title of a series of essays contributed weekly by Charles Morgan to *The Times Literary Supplement* from Oct. 31, 1942. They were reprinted in a book, *Reflections in a Mirror*, 1944. See *Comedy*.

**Mencius** (Latinised form of Meng-tse). Chinese moral philosopher (c. 372–289 B.C.), belonging to the school of Confucius. Born in Shantung, he travelled from court to court in search of a prince who would carry out his political principles. He held the people to be the most important part of a state and superior to their rulers, as to whom he expresses himself freely in the treatise which bears his name. He believed in the original goodness of human nature. As economist and social reformer, he was in advance of his age. See *Confucianism*.

**Mencken, HENRY LOUIS** (b. 1880). American critic. Born at Baltimore, Sept. 12, 1880, he was



H. L. Mencken, American critic

educated at its polytechnic and became a reporter. By 1908 he was literary critic for the magazine *Smart Set*, of which he was joint editor, 1914–23. With G. J. Nathan he founded the *American Mercury* in 1924, being sole editor 1925–33. Fearless in criticism, Mencken took generally a satirical line and laboured the academic and "moronic" element in the literary world. His books include *In Defence of Women*, 1917; *The American Language*, 1918 (supplements 1945, 1947); *Prejudices*, 6 series, 1919–27; *Treatise on Right and Wrong*, 1932; and the autobiographical *Happy Days*, 1939; *Newspaper Days*, 1941; *Heaven Days*, 1943. See *United States of America: Literature*.

**Mende.** Town of France, in the dept. of Lozère. It is 75 m. N.W. of Avignon, on the left bank of the Lot, at the foot of the Causse de Mende, which rises sheer above it for 1,000 ft. The 14th century cathedral was rebuilt three centuries later. The neighbouring hermitage of S. Privat is a famous place of pilgrimage.

**Mendel, GREGOR JOHANN** (1822–84). Austrian scientist. Born near Odrau in Austrian Silesia, he became a priest and an inmate



Menai Strait, showing, left, the suspension bridge, and, right, the Britannia tubular bridge, which cross the channel

of an Augustinian monastery at Brunn, 1843. There as monk, and



Gregor Mendel,  
Austrian scientist

from 1860 as a b b o t , he passed his life, while for about 15 years he taught natural history in the school at Brunn. He carried out experiments in the

monastery garden from which developed Mendel's laws of heredity. He published his theory in 1866. It lacked recognition until rediscovered 1900, and Mendel died a disappointed man, Jan. 6, 1884. See Mendelism.

**Mendeleev**, DMITRI IVANOVICH (1834-1907). Russian chemist. He was born Feb. 7, 1834, at

Tobolsk, being educated there and at St. Petersburg university. In 1863 he was appointed professor of chemistry at the technological institute, St. Petersburg

and in 1866 occupied the chair of chemistry at the university. There he wrote his Principles of Chemistry, and during this time the periodic law, with which his name is associated, occurred to him. He embodied the results of a comparison of the atomic weights and general properties of the elements, which he undertook with a view of



Dmitri Mendeleev,  
Russian chemist

proving his theory of periodicity, in a paper read in 1869 before the Russian Chemical Society.

In drawing up the table of the elements according to his periodic conception he left gaps which he predicted would be filled by elements at that time undiscovered. Most of these have since been discovered, and the experimental proof of the existence of universal ether—a corpuscular substance with an atomic weight of 0.000,000,000,053—which he postulated, may yet be forthcoming. Mendeleev died Feb. 2, 1907.

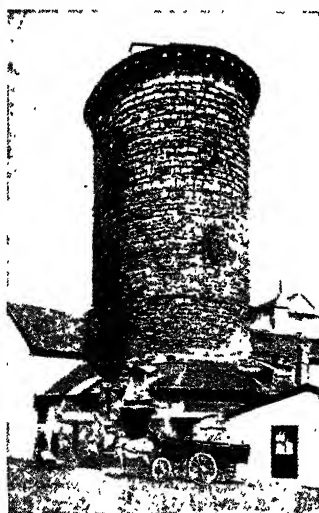
**Mendelism**. Name given to a set of natural laws controlling the transmission of characters, due to genes in the chromosomes, from one generation of organisms to another. It derives its name from Gregor Mendel (v.s.) who, by paying attention to simple "unit" characters showed that some characters of related organisms are contrastable in pairs, and that among the second generation of progeny from a cross between parents differing in such characters there are to be found members resembling each parent: and deduced that this segregation of characters is explicable only by assuming that a gamete can carry the factor (gene) for one only out of each pair.

Later researches on similar lines have shown that the dominance, which Mendel found one character to exhibit to the exclusion of the other when they were both inherited, does not invariably occur. Mendel crossed a pure bred plant which under normal conditions of self pollination would produce round seeds with another which similarly would form wrinkled seeds. The seeds resulting from this monohybrid (one factor) cross were all round and when the plants into which they grew were allowed to pollinate themselves they formed seeds in the proportions of three round to every one wrinkled, as shown in the table:

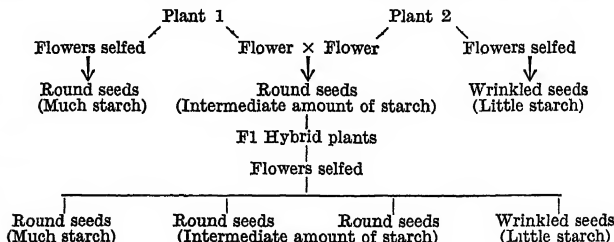
starch grains which dry out slowly so that shrinkage is uniform. On the other hand in wrinkled seeds few starch grains are formed and much sugar left so that drying is rapid and shrinkage uneven. Seeds resulting directly from the cross have a starch content less than one parent and greater than the other, as have two out of every four of their offspring by selfing. All these heterozygotes, despite the fact that their starch content is sufficient to make them round, are intermediates in the real character of starch content. Another example of incomplete dominance is seen in the cross between red and white varieties of *Mirabilis jalapa* which results in an F1 (first filial generation) with pink flowers. Thus both allelic genes may take effect in the heterozygote, though to a degree which varies in various instances from that of complete dominance as in Mendel's tall peas to equality as in *Mirabilis*.

The implication in Mendel's work that characters of related organisms are pairable alternatives has also turned out to be too narrow. Numerous cases are known among both plants and animals in which there is a series of alternatives any one of which may serve as the allelomorph of another. A frequently cited example of this multiple allelomorphism is shown by maize. Here redness may appear in any one or more of husks, silks, pericarp, and cob, giving sixteen possible colour patterns. Any two colour patterns are allelic, and crosses followed by inbreeding of the F1 hybrids result in segregation of parental patterns in a typical monohybrid manner.

Even Mendel's conception of the unity of characters may prove misleading unless it is realized that, as in the round and wrinkled peas, the readily observable feature is not necessarily an intrinsic character of the organism. Without this knowledge it might rea-



Mende, France. Tower of the ancient citadel, now used as belfry. See p. 5637.



It has since been discovered that roundness of the seed is due to the conversion, as the seed ripens, of most of its sugar into many

sonably be expected that a cross between any two strains of white flowered sweet peas would yield white flowered offspring. Actually

when two particular strains of such peas are crossed the F1 have coloured flowers. This is because colour results from two internal conditions engendered by two dominant genes, say C and P. One white parent has the capacity due to C for forming a substance which becomes coloured when in contact with another substance formed by the second parent because its nuclei contain P. There is not one pair of characters, colour and white, but two, productions of two substances with alleles of non-production corresponding to recessive genes c and p. The readily obvious character is often considered as due to the interaction of genes. See the table:

The two white flowered parents  
Their gametes which unite ..  
The F1 coloured plant ..  
The four kinds of gamete formed  
by the F1 ..

Within the rectangle the sixteen kinds of plant in F2 resulting in equal numbers from chance mating of F1 gametes.

CCpp		Cp		& ×		cP		ccPP	
CP		cP		Cp		cp		CP	
CCPP	cCpP	CpCP	cPCP	CpCP	cPCP	CpCP	cPCP	CCPP	cCpP
CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP
CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP
CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP	CcPp	cCcP

Of these 9 contain C and P and hence will form coloured flowers; 3 contain C and not P and hence form one only of the substances necessary for colour; 3 contain P and not C and form the other substance only; and 1 contains neither C nor P and forms neither substance: 7 plants out of 16 consequently have white flowers.

In one other way did Mendel fall short of the truth. The characters he selected in peas for his experiments behaved in breeding independently of one another and he drew the conclusion that all characters would do so. The present state of knowledge is that characters are generally transmitted in groups (linked) corresponding to the chromosomes in which their genes occur. Two kinds of deviation from this rule are well known. Reciprocal exchange of members of allelic groups (recombination) occurs in certain instances in a definite proportion of individuals of each generation. This is due to formation of chiasmata between chromatids during meiosis. Members of one group may become transferred without reciprocation to another group in a fortuitous manner. This is in some cases due to the translocation of a part of one chromosome to another during aberrant nuclear division.

Comyns J. A. Berkeley

**Mendel Pass.** Mountain route in the Trentino, N. Italy. It is on the carriage road from Kaltern to Fondo, alt. 4,460 ft. The rly. from Bolzano continues to St. Anton, whence a cable rly. ascends to Mendel station. On the summit are hotels, etc., the locality being an excursion centre, famed for its fine views of the Brenta, Presanella, Mannolata, etc. See Alps.

**Mendelsohn, ERIC** (b. 1887). Anglo-German architect. Born in Berlin, March 21, 1887, he studied there and at Munich. He won international reputation by designing such buildings as the Einstein observatory tower at Potsdam, and the Columbus House in Berlin. Leaving Germany in 1933 to reside in London, he built the Hebrew university in Jerusalem, a government hospital in Haifa, and the De La Warr pavilion in Bexhill. Member of the Berlin academy of arts before severing his connexion with Germany, he was elected F.R.I.B.A.

**Mendelssohn, MOSES** (1729-86). Jewish philosopher. Born at Dessau, Germany, Sept. 6, 1729,

the incidental music in 1842); this masterpiece established his reputation for genius. Now began lifelong friendship with the pianist Moscheles, and in 1825 his father took him to Paris, where he met Rossini and Meyerbeer, the musical giants of the day.



J. L. F. Mendelssohn-Bartholdy, German composer

Mendelssohn conducted Bach's neglected S. Matthew Passion in 1828, and initiated the revival of interest in that composer by forming the Bach Gesellschaft. In 1829 he paid the first of many visits to England and Scotland, where he derived inspiration for his Scottish symphony and Hebrides overture. The Italian symphony was finished in 1833, and from that year he occupied positions as conductor and musical director at Düsseldorf, Leipzig, and Berlin, varied by visits to London. After a short residence in Frankfurt he returned to Leipzig, directing concerts, teaching, and at the same time working at his oratorio Elijah, the first performance of which he conducted in Birmingham, Aug. 26, 1846. After having visited England on no less than ten occasions, he died at Leipzig, Nov. 4, 1847.

Mendelssohn's position in musical history has been subject to fluctuation. Early popularity led on to rapturous acclaim, and he was lionised both socially and musically. Now it is conceded that together with a gift for delicious melody and flawless craftsmanship he had a certain speciality of approach which caused his music to lapse into the sentimental. His most played works besides those mentioned include the overture Ruy Blas; the great violin concerto, string octet, two austere piano trios; and 48 songs without words for the piano, in which category come also characteristic capriccios and fantasies. Mendelssohn's some 80 songs introduced *Lieder* into England; their day has waned, but they educated public taste and prepared the ground for Schumann and Brahms. Elijah remains a standard work, almost rivalling Handel's Messiah in popularity.

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Moses Mendelssohn, Jewish philosopher

he was at first in straitened circumstances, but a rich silk merchant in Berlin, to whose children he was tutor, left him the business. He was a friend and collaborator of Lessing, whose Nathan the Wise perpetuates his memory. His works are especially devoted to the promotion of religious enlightenment. Although a jealous defender of his own religion he advocated entire freedom of thought. Mendelssohn contributed greatly to the intellectual enlightenment of the Jews of Germany, and to their social and political emancipation. He died Jan. 4, 1786. His grandson was the composer Felix Mendelssohn-Bartholdy (v.i.).

**Mendelssohn-Bartholdy, (JAKOB LUDWIG) FELIX** (1809-47). German composer. Son of a wealthy Jewish banker, he was born in Hamburg, Feb. 3, 1809, and early showed exceptional musical talent. He studied composition with Zelter, whose friend Goethe he met at Weimar. At nine he appeared at a public chamber concert, and completed his first symphony in 1824. Two years later he wrote the overture to A Midsummer Night's Dream (completing

**Mendere**, **MENDERES**, or **MENDER**. River of Asia Minor. It flows into the Aegean, S.W. of Aidin, after a course of about 240 m. Anciently it was called the Maeander, and divided Lydia and Caria. So winding is it that the word meander has become a synonym for a circuitous, twisting way of any kind.

**Mendes**. Grecised name of an ancient city near Tmai el-Amdid, S.E. of Mansura, Lower Egypt. It was the cradle of the XXIXth dynasty. In the IIInd dynasty it was already the seat of worship of the sacred ram, usually represented with branching horns surmounted by a uraeus or symbolic serpent. The cult, suppressed by the Persian invaders, was revived by Ptolemy II Philadelphus, 309-246 B.C. Some stone tombs in which the rams were interred are extant.

**Mendès**, **CATULLE ABRAHAM** (1841-1909). French poet, novelist, and playwright. Of Jewish origin,



Catulle Mendès,  
French poet

he was born at Bordeaux on May 22, 1841, and founded the *Revue Fantaisiste* in 1859, an early rallying-point of the Parnassian movement, of which Mendès was a member. Among his early books of poems were *Philoméla*, 1863, and *Odelette Guerrière*, 1870. He published numerous novels and volumes of short stories, for the most part sensuous and licentious in character, but well constructed and brilliantly written. He also wrote plays and operettes, as *La Part du Roi*, 1872; *Le Capitaine Fracasse*, 1878 (after Gautier); and *La Reine Fiamette*, 1898. From 1893 dramatic critic of *Le Journal*, he was accidentally killed in a tunnel on the Paris-St. Germain rly., Feb. 8, 1909.

**Mendez Nunez**, **Casto** (1824-69). Spanish admiral. Born at Vigo, July 1, 1824, he is chiefly known as the commander of the fleet which, in May, 1866, bombarded the Peruvian port of Callao. In this engagement he was wounded and his fleet badly damaged, so he withdrew it, reaching the Philippines in ten days. He died at Vigo, Aug. 21, 1869.

**Mendi**. Negro people in Sierra Leone, W. Africa. Well formed, of good physique, their social life is governed by secret societies. After a period of bush-school training, youths are initiated into the Poro mysteries; girls are similarly received into the Bundu society.

Among the fetish-objects are ancient steatite figurines, numori, derived from Pre-Mendian caves. In 1898 the British forbade the imposition of food-taboos by the Poro executive, and a massacre of British and American missionaries led to a punitive expedition.

**Mendicancy** (Lat. *mendicare*, to beg). Condition or profession of begging. Specifically, the term is applied to the rule of certain religious devotees and monastic orders whereby they are forbidden to acquire any property, but are required to subsist on the charity of the faithful. The difficulties attending the continued practice of such counsel of perfection, and the defects inherent in the system as a rule of communal life, may be traced in the history of all the mendicant orders that were instituted in Europe from the 13th century onwards. See Monasticism.

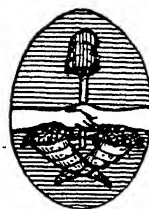
**Mendicant Friars** (Lat. *mendicams*, begging). Religious orders which depend entirely on the alms of the faithful for their support. While no individual monk or nun can hold or use property for personal profit, most communities as such possess property in the form of endowments or commercial enterprises for their common support.

In the 13th century a new spirit of enthusiasm sprang up under the teaching of SS. Francis and Dominic, and orders of friars were founded, which were forbidden to possess property in any form beyond the houses in which they dwelt. The most notable of these were the Carmelites, Franciscans, and Dominicans. The Augustinians soon followed their example; and in 1497 the Servites were also officially recognized as a mendicant order. At first the members of these orders actually begged their bread from door to door; but this soon ceased. See Dominicans; Franciscans.

**Mendicity**. Term applied in sociology to the habitual practice of begging as a means of livelihood. Persons who, being able to maintain themselves by lawful labour, refuse to work and resort to begging to get their living, have been the object of penal enactments in England since the time of Edward III, and are now liable to penalties under the vagrancy law. A society for the suppression of mendicity was founded in London in 1818, its principle being to refuse money to beggars, and to give them instead tickets referring them to district officers, where their case is inquired into and dealt with on its merits, labour tests being applied to all fit applicants. See Family Welfare Association; Pauperism.

**Mendip Hills**. Plateau of S.W. England. It lies between the valleys of the Parret and Salisbury Avon in Somerset, and is connected by the island of Steep Holm with Glamorganshire across the Bristol Channel. Composed of carboniferous limestone. It duplicates the physical features of the Southern Pennines, with swallow holes, caverns, lead mines, and neighbouring deposits of coal. Cheddar cliffs are, however, unique. The highest point is Black Down, 1,068 ft.

**Mendoza**. Province and city of W. Argentina. Bounded on the W. by the Andes, it is elsewhere level



Mendoza arms

and fertile, and produces wine, maize, olives, fruit, cereals, cattle, hides, and wool. Its mineral resources include valuable deposits of gold, silver, copper, lead, coal, and petroleum. Area 57,445 sq. m. Pop. 549,276. Mendoza, the capital, is some 645 m. by rly. W. of Buenos Aires, and is important as the chief centre of trade between Argentina and Chile, with which it communicates by the Trans-Andean Rly. to Valparaiso, opened in 1910. Destroyed by earthquake, 1861, it has been rebuilt. Pop. 103,879.

**Mendoza**, **DANIEL** (1764-1836). English pugilist, a Jew, born in London. His first big fight was when

he beat Sam Martin, the Bath butcher, at Barnett, April 17, 1787. A very quick and clever fighter, he twice defeated Richard Humphries and William Warr, but



Daniel Mendoza,  
Jewish pugilist

was beaten by John Jackson at Hornchurch, April 15, 1795. On March 21, 1806, he was successful over Henry Lee at Grinstead Green, Kent. Mendoza's last appearance in the ring was in July, 1820, when he was defeated by Tom Owen. He wrote *The Art of Boxing*, 1789. Mendoza died in London, Sept. 3, 1836. See *Boxing*.

**Menelaus**. In Greek legend, king of Sparta, brother of Agamemnon, and husband of Helen, daughter of Tyndarus, king of Sparta. She selected Menelaus as her husband, whereupon Tyndarus resigned the throne to his son-in-law. At the Spartan court Paris, son of Priam king of Troy, was hospitably received, but during the absence of

Menelaus in Crete, he carried off Helen, she being the bride promised him by Aphroditē (see Paris). The result of the rape of Helen was the Trojan war. Menelaus fought with Paris, and would have killed him, had not Aphroditē intervened to save her favourite. At the capture of the city, Menelaus regained possession of Helen, whom he forgave for her faithlessness, and after eight years' wandering again reached Sparta, where he and Helen (*q.v.*) lived happily for many years.

**Menelek II** or **MENELIK II** (1844–1913). Emperor of Abyssinia. Born at Choa, Aug. 18, 1844, of a long line of Ethiopian kings, he claimed descent from Solomon and the queen of Sheba. In fact his father was a little more than one chief among



Menelik II, Abyssinian emperor

many, but Menelek established his authority on solid and wide foundations. Italian operations on the coast of the Red Sea in 1885 threatened Abyssinian independence, and the treaty of Ucciali signed by Menelek in 1889 was interpreted as giving Italy a protectorate over Abyssinia. But on March 1, 1896, the Italians were defeated at Adowa (*q.v.*). Eritrea was given to Italy, and Menelek was left in peace to develop his country. He showed on the whole an enlightened policy, abolished slavery, and encouraged trade. He died at Addis Ababa, Dec. 12, 1913. See Abyssinia.

**Menendez y Pelayo, MARCELINO** (1856–1912). Spanish poet and critic. Born at Santander, Nov. 3, 1856, he was educated at Barcelona and Madrid universities, his academic career being so extraordinarily brilliant that in 1878 a special Act was passed to authorise his appointment as a professor at 22. A man of great intellectual range, he wrote on poetry, the drama, history, philosophical criticism, and science, besides producing original poems. Two of his most notable works are *Historia de las Ideas Estéticas en España*, and *Historia de los Heterodoxos Españoles*. He died at Santander, May 19, 1912.

**Menevia**. Name of a bishopric in Wales of the R.C. Church. The name is that of a traditionally Roman settlement at St. Davids, Pembrokeshire.

**Meng-Chiang**. Former puppet government of Inner Mongolia. On Nov. 22, 1937, the Japanese established the federated council of Meng-Chiang, having supervisory functions over three so-called federations: (1) the United Leagues of Mongolia, with its capital at Hoko-hoto; (2) Chin-Pei (N. Shansi), capital Tatung; (3) Cha-Nan (S. Chahar), capital Kalgan. In 1939 Meng-Chiang was reorganized under the style of the federal autonomous government of Mongolia, which collapsed with the defeat of Japan in Aug., 1945. The area involved was about 200,000 sq. m., with a pop. of from 5 to 7 millions.

**Mengo**. Hill near Kampala, N. of Victoria Nyanza, in Uganda. Here is the residence of the king of Buganda and the native parliamentary house. Mengo is one of the administrative divisions of Uganda.

**Mengs, ANTON RAPHAEL** (1728–79). Bohemian painter. Born at Aussig, March 12, 1728, he received lessons from his father before proceeding to Rome in 1741. In 1749 he was painter to the king of Saxony. He resided at Dresden till 1762, when he again visited Rome, and became in 1764 a director of the Vatican academy. His ceiling of S. Eusebius and his Mount Parnassus in the Villa Albani were painted in 1757. In 1761 the king of Spain invited him to Madrid. In 1770 he was at work in the Vatican, and returning to Madrid in 1773 he decorated the royal palace. He also painted many portraits. He died June 29, 1779.

**Mengtse**. Former treaty port in the S.E. of Yunnan prov., China, opened to foreign trade in 1889. The town, situated 3,500 ft. above sea level, is on the Kunming-Laokai rly. The existing walls were built in 1615, and a temple to Confucius dates from the 14th century. Mengtse is the chief distributing centre for this part of Yunnan for the trade from Canton to Tongking. It exports tin, mined at Kochn, 20 m. away. Pop. 193,004.

**Menhir** (Celt., long stone). Prehistoric unhewn pillar-stone with earth-sunk base. The largest in Europe is the Men-er-Hroek, Morbihan, Brittany, once 67 ft. high, weighing 342 tons. Those at Plésidy, Côtes-du-Nord, and at

Plouarzel, Finistère, are 37 ft. high. There are 1,600 in France, besides 4,600 in rows or circles. They are scattered over Dartmoor, Cornwall, Northumberland, and Wales, often near stone circles; of the three Devil's Arrows, Boroughbridge, Yorks, one is 31 ft. high. There are hundreds in Ireland, the most renowned at Tara, Meath; fewer in Scotland, that at Clach-an-Truiseil, Lewis, being 18½ ft. high.

Sometimes perforated—Odin stone at Stenness (*q.v.*); Men-an-tol, Cornwall; Cuil-Irra, Sligo—they occasion much local folklore. Many stand near neolithic sepulchres. In Sardinia some bear carvings representing breasts; in Great Britain, Scandinavia, and elsewhere, they often bear cup and ring markings, ogams, and Christian devices. They occur along the megalithic track in N. Africa, Syria, India, and the Pacific. In the Malay Archipelago they sometimes display carved human forms. See Hoar-stone; Mazzeba; Obelisk; Stone Monuments.

**Ménière's Disease**. Disease characterised by sudden attacks of intense giddiness associated with noises in the ears, jerking of the eyeballs, sudden falling to the ground, and other symptoms. Due to disease of the labyrinth of the ear caused by degenerative changes, it was first described in 1861 by the French doctor, E. A. Ménière. Administration of bromide or phenol barbitone affords relief, as does that of the salicylate family. In intractable cases the diseased labyrinth must be destroyed.

**Menin** (Flemish, Meenen). Town of Belgium, in the prov. of W. Flanders, it lies on the Franco-Belgian frontier, on the left bank of the Lys, 6½ m. by rly. from Courtrai. An old centre of the Flemish spinning and lacemaking industries, it suffered extensive damage from its proximity to the



Menin Gate at Ypres, rebuilt and unveiled in 1927 as a memorial to British soldiers who fell here



fighting line in the First Great War, during which it was behind the German front from Oct., 1914, to Oct., 1918. The Menin Road (to Ypres) was the scene of much heavy fighting. At the Ypres end of the Menin Road, known as the Menin Gate, a handsome archway, designed as a memorial to 54,896 missing British soldiers, was unveiled by Lord Plumer in July, 1927. Menin was captured by Turenne in 1658, passed to Spain in 1678, and was taken by Louis XV in 1744. Its fortifications were demolished under the terms of the treaty of Aix-la-Chapelle, 1748. It was also the scene of a French victory over the Allies, Sept., 1793. See illus. p. 5641.

**Meningai.** Volcanic mt. of Kenya, close to Lake Nakuru. Its height is 7,478 ft., and its crater, 2,000 ft. deep and 8½ m. wide, is the world's second largest.

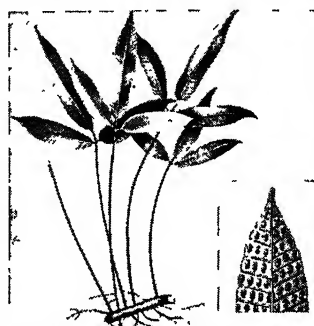
**Meninges.** Membranes covering the brain and spinal cord. The most external, the *dura mater*, is closely attached to the bones of the skull. It consists of two layers, in most places firmly adherent, but separated along certain lines to form blood sinuses, or spaces for the conveyance of venous blood, and in other places where the inner layer dips into the brain forming strong folds, which run between and support its various parts. The second layer is the *arachnoid*, and the innermost is the *pia mater*, a delicate membrane supporting the blood vessels and closely investing the brain.

**Meningitis.** Inflammation of the meninges. The term *pachymeningitis* is sometimes used for inflammation of the *dura mater*, or outermost covering of the brain, and *leptomeningitis* for inflammation of the *arachnoid* and *pia mater*, or inner covering of the brain. Simple acute meningitis may be due to injury of the brain, or abscess or extension of a septic inflammation from the ear, and may also arise in the course of acute infectious diseases, such as small-pox. Tuberculous meningitis is most often met with in children. Cerebro-spinal fever is a form caused by infection by a specific micro-organism. Syphilis is yet another cause.

In tuberculous meningitis there is a preliminary stage before the definite symptoms develop, in which the patient is irritable, sleepless, loses appetite, and becomes emaciated. Irregular fever is frequent. Other symptoms are headache, vertigo, nausea, vomiting.

Convulsions and muscular spasms may occur. Delirium, coma, and paralysis may precede death. Cerebro-spinal fever is described under its own heading. The death rate in cases of meningitis is high, and if recovery occurs there may be permanent paralysis of groups of muscles, or impairment of mental faculties. Treatment is mainly symptomatic, after the sera proper to the cause; streptomycin in cases of tubercle, penicillin and the sulpha group in their appropriate usage have been employed. When the condition has run on to abscess formation, surgical measures are generally necessitated.

**Meniscium.** Small genus of tropical ferns of the family Polypodiaceae. They have the leaves



Meniscium. Leaves of the tropical fern. Inset, back of leaf showing spore cases

undivided, or cut from the edges into simple leaflets. The spore cases are arranged in uncovered, oblong, or curved masses.

**Meniscus.** Name given to the curved upper surface which a liquid exhibits when contained in a tube. The curvature in the case of water is downwards, i.e. at the sides of the tube the water is drawn up and in the middle it has its lowest level. In a barometer the mercury surface is curved upwards, the level of the top of the column, this time in the centre, being read. Narrow tubes produce greater curvature which can introduce appreciable errors into barometry. The term is also used in optics, a meniscus lens being convex on one side and concave on the other.

**Menispermaceae.** Family of tropical shrubs, mostly of a trailing habit. They have alternate leaves, and small flowers with the sexes distinct, the sepals and petals similar. The family includes species of *Anamirta*, whose poisonous berries are known commercially as *cocculus indicus*.

**Menkaura.** Egyptian king of the IVth dynasty. The Mycerinus

of Herodotus, he built the third pyramid of Gizeh. A basalt sarcophagus removed by Vyse in 1838, and intended for England, was lost at sea. A wood coffin with his inscription, now in the British Museum, contained a skeleton, apparently of a later age. He was probably interred at Abu Roash.

**Menken, ADAH ISAACS** (1835-68). An American actress. Born Dolores Adios Fuertes, at New Orleans, she married a Jewish musician John Isaacs Menken in 1856, and was, in turn, ballet dancer, circus performer, artist's model, and equestrienne. She performed at Astley's Theatre, London, 1864, where her equestrian act Mazeppa caused a sensation. The friend of Swinburne (who immortalised her as Dolores) and of the elder Dumas, she died Aug. 10, 1868. Consult *The Naked Lady*, B. Falk, 1934.

**Mennonites** OR MEMNONITES. Protestant sect founded by Menno Simons (1492-1559) in Friesland. Analogous to the Anabaptists (*q.v.*) from whom they arose, the Mennonites reject all authority in religious matters, believe in the individual interpretation of the Scriptures, and refrain from war, punishment, administration of oaths, and such public duties as the magistracy. The Fundamental Book of Christian Faith, by the founder of the sect, appeared in 1539. The movement spread through Holland, N. Germany, Alsace, and other parts, though variations of doctrine and practice were frequent, and small congregations are still found in these regions. In the U.S.A. and Canada the Mennonite Church, which dates in America from a settlement in Pennsylvania in 1683, is divided into some twelve branches, and counts about 150,000 members.

**Men of Harlech.** Welsh song, the full title being *The March of the Men of Harlech*. See *Harlech*.

**Menominee.** City of Michigan. U.S.A., the co. seat of Menominee co. It stands on the Menominee river, at its influx to Green Bay, 164 m. N. of Milwaukee, and is served by the Chicago, Milwaukee, and St. Paul, and other rlys. Founded in 1833 as a fur trading centre (chartered 1883), it soon developed an export trade, and became known for cheese production, 2,000,000 pounds of cheese being annually manufactured in the surrounding countryside. It is also a fishing centre, especially for smelt. Pop. 10,230.

**Menomonie.** City of Wisconsin, U.S.A., the co. seat of Dunn co. It is on the Red Cedar river, 70 m. E.



of St. Paul, and is served by the Chicago, Milwaukee, and St. Paul, and the Chicago and N.W. rlys. Settled in 1846, it was a thriving centre of timber production for the next forty years, being chartered in 1882, but the city declined with the clearing of the Wisconsin pine forests. It is now mainly an agricultural centre. Pop. 6,582.

**Menopause.** That point in the cycle of a woman's life when the monthly periods cease. This generally marks the end of her reproductive, though not of her sexual, life. See Change of Life; Menstruation.

**Menpes, MORTIMER** (1859-1938). Anglo-Australian painter and etcher. Born in Australia and educated at Port Adelaide, he came to England, and studied in London, afterwards travelling in nearly all parts of the world. Besides producing much original work, he perfected a process for reproducing oil paintings known by his name, founded the Menpes Press, instituted fruit farms at Pangbourne, and wrote a number of books, including reminiscences of J. M. Whistler, his friend and confidant, 1904. He died April 1, 1938.

**Menshevik** (Russ. *meshinstvo*, minority). Russian political label, dating from 1903. When the Russian Social Democratic party split over the issue of radicalism or moderation in 1903, the less extreme portion were in the minority and were styled Mensheviks. They withdrew from the party and opposed the Bolsheviks in the revolution of 1917. See Bolshevik.

**Meshikov, ALEXANDER DANILOVITCH** (1672-1729). Russian soldier and statesman. Born in Moscow, Nov. 16, 1672, he entered the service of Peter the Great by way of the army, and rose to be field-marshal. He was the chief adviser of Peter, and of Catherine I. The power exercised by one who had risen from the masses provoked the jealousy of the old aristocracy, and Meshikov was deprived of his estates and banished to Siberia in 1727. He died Nov. 2, 1729.

**Menshikov, ALEXANDER SERGEYEVITCH, PRINCE** (1787-1869). Russian diplomatist. Born Sept. 11, 1787, he entered the imperial service in 1805, and became the Russian ambassador at Constantinople in 1853, when his conduct of the negotiations with regard to the guardianship of the Holy Places led to the rupture followed by the Crimean War. He was made governor of the Crimea and after the battle of the Alma, where he commanded in person, proceeded to

fortify Sevastopol. He was recalled in 1855, broken in health by the hardships he endured, and as a member of the Council of the Empire was one of the leaders of the reactionary party till his death on May 2, 1869.

**Mens Rea.** Legal term. The blameworthy condition of mind which with a very few exceptions a person must possess before he can be guilty of a crime. It is not necessary that the accused should know that what he was doing was a crime. In some crimes a specific intent is required, e.g. an assault with intent to do grievous bodily harm, but in other cases it is sufficient to show the accused must have known the act was wrong. Negligence may also be sufficient.

**Menstruation** (Lat. *menstruus*, monthly). Term for the discharge of blood and mucus which occurs approx. monthly from the uterus of adult women. It is the breaking down and coming away of the uterine mucus-membrane which, in pregnancy the site of a fertilised ovum, at other times grows afresh after each menstrual period. In temperate climates menstruation begins between the years of 11 and 15; in warm climates, and among peoples belonging to warm climates, it begins earlier. The contemporary tendency, for some unknown reason, is towards a later start; but if the function is not established by the age of 16 years medical help should be sought, because too late a beginning implies deficient glandular or organic development which, if untreated, may result in sterility.

Menstruation marks the entry into puberty, and the secondary sexual characteristics become manifest, e.g. enlargement of the breasts in preparation for lactation, and such psychological changes as modesty and manifestations of the maternal instinct.

Menstruation ceases 30 to 40 years after it begins, according to the constitution and family history of the individual. In general, the earlier the beginning, the later the ending. At the time of the menopause, or change of life, the loss of blood may be considerable or irregular; but if slight bleeding persists, medical help must be sought, as this may indicate that the lining of the uterus is unhealthy. Non-appearance of the menstrual flow after the function has begun is called amenorrhoea (Gr. *a*, not, *mên*, month, *hrein*, to flow). This is normal during pregnancy and the early months of lactation; the glandular secretion from one part

of the ovaries inhibits that from another part which causes the menstrual flow. Ovarian secretions are under the remote but all powerful control of the pituitary (*q.v.*) gland. Shock or change in habit, e.g. removal from one neighbourhood to another may cause amenorrhoea. So also may diseases, e.g. tuberculosis, when amenorrhoea is an economy mechanism to save the patient's strength.

Too much or too frequent loss of blood may be due to glandular disbalance which can be corrected by the physician; or to a tumour or inflammation which needs the attention of the gynaecologist. Too slight a loss also needs gynaecological treatment. Painful menstruation is called dysmenorrhoea (Gr. *dus*, bad, *mên*, month, *hrein*, to flow). It may be caused by bad position of the uterus, inflammation, or tumour, but is more frequently due to pain in the nerves near the mouth of the uterus, and can then be relieved by certain drugs, of which the aspirin and the belladonna groups are particularly useful; or by mechanical stretching of the neck of the uterus. Unless there is some underlying medical or surgical reason for pain, menstruation should not be painful. Some nervous unbalance is common during the menstrual period. Exercise is the essential remedy for discomfort, since it prevents congestion of the uterus, a possible cause of pain, and is a great sedative of the nervous system. See Change of Life.

Hilary Ledgerwood, M.D.

**Mensuration.** (Lat. *mensuro*, I measure). The application of mathematics to ascertain the lengths of lines, the areas of surfaces, and the volumes of solids. As the word geometry (literally, land measurement) suggests, mathematical principles and methods were developed in grappling with mensuration problems. Many mensuration formulae can be proved geometrically; others involve trigonometry or the calculus.

The following principles simplify much mensuration:

(a) An approximate result may be quite satisfactory for practical purposes, since few measurements can be made accurately to more than four figures.

(b) The length of an irregularly curved line can sometimes be most easily calculated by dividing it into straight portions and curved portions, and calculating the length of each portion separately. The shorter the portions, the more accurate the result will be.

(c) An irregularly shaped surface can often be divided into triangles or rectangles.

(d) An area remains the same if areas are added to it in some places and equal areas are subtracted in others; thus a straight line may be substituted for an irregularly curved part of the boundary, if the areas discarded are equal to those added.

(e) An area can be calculated approx. by tracing it on squared paper and then counting the squares within the boundary, parts of a square being counted as whole squares if they are at least half a square and ignored when they are less.

(f) The volume of an irregular solid can often be ascertained by submerging it in water, and accurately measuring the volume of the water displaced; or by weighing the solid, and then weighing a known quantity of the solid, say, a cubic inch, and dividing the second weight into the first.

(g) In similar figures, that is, figures of the same shape, the lengths of corresponding sides or dimensions are proportional; thus, if two right-angled triangles each have a base angle of  $40^\circ$ , and the base of one is 2 ft. and the base of the other 40 ft., the perpendicular of the second will be 20 times that of the first.

(h) The areas of similar figures are proportional to the squares of corresponding sides; thus, if one circle has a diameter of 3 ins. and another a diameter of 5 ins., while the length of the circumference will be in the ratio 3 : 5, the areas will be in the ratio  $3^2 : 5^2$ , that is, 9 : 25. This rule applies to areas depicted on maps.

(i) The volumes of similar solids are proportional to the cubes of like dimensions. Thus, if a statue is 6 ft. high and an exact model of it is 5 ins. high, the volume of the statue will be  $72^3/5^3$  times that of the model.

(j) Borders are most easily calculated as the difference between the area contained by the border and the area including the border. Thus, the area of a 1-in. border surrounding a rectangle 4 ins. by 3 ins. is  $(6 \times 5) - (4 \times 3)$  sq. ins., that is, 18 sq. ins. Similarly, the volume of solid containers can be calculated as the difference between the interior and the exterior volume. Thus the volume of the wood in a box of internal dimensions 1 ft.  $\times$  1 ft. 6 ins.  $\times$  2 ft., the wood being  $\frac{1}{2}$  in. thick throughout is  $(13 \times 19 \times 25) - (12 \times 18 \times 24)$  cu. ins.

#### IMPORTANT FORMULAE.

*Triangle*: Area =  $\frac{bh}{2}$ , where  $b$

is the base and  $h$  is the perpendicular distance of the vertex from the base; also, when the three sides,  $a$ ,  $b$ ,  $c$ , are known, area =  $\sqrt{s(s-a)(s-b)(s-c)}$ ,  $s$  being half the perimeter, that is,  $\frac{(a+b+c)}{2}$ .

*Square*: Area =  $s^2$ , where  $s$  is the length of the sides; diagonal =  $\sqrt{(2s^2)}$ .

*Rectangle*: Area =  $ab$ , if  $a$  and  $b$  are the lengths of the sides; diagonal =  $\sqrt{a^2 + b^2}$ .

*Parallelogram*: Area =  $ad$ , if  $a$  is the length of one side and  $d$  is the distance between it and the other parallel side.

*Trapezium*: Area =  $\frac{1}{2}d(a+b)$ , if  $a$  and  $b$  are the parallel sides and  $d$  is the distance between them.

*Circle*: Circumference =  $\pi d$ ,  $d$  being the diam. and  $\pi$  approx. 3.14159 (say,  $\frac{22}{7}$ ). Area of circle =  $\pi r^2$ ,  $r$  being the radius or  $\frac{d}{2}$ .

*Ellipse*: Area =  $\pi ab$ , where  $a$  and  $b$  are the semi-axes.

*Cube*: Vol. =  $s^3$ , where  $s$  is the length of a side. Area of six faces =  $6s^2$ .

*Regular prism*: Vol. =  $(c.s.)l$ , where  $(c.s.)$  is the cross-section and  $l$  is the length.

*Cylinder*: Vol. =  $\pi r^2l$ ; curved surface of cylinder =  $2\pi rl$ .

*Sphere*: Vol. =  $\frac{4}{3}\pi r^3$ ; area of surface =  $4\pi r^2$ .

*Pyramid*: Vol. =  $\frac{1}{3}$  area of base  $\times$  perp. height.

*Cone*: Vol. =  $\frac{1}{3}$  area of base  $\times$  height. Curved surface =  $\pi r \times$  slant height.

**Mental Deficiency.** Legal term meaning a condition of arrested or incomplete development of mind existing before the age of 18. The Mental Deficiency Acts 1913 to 1927 provide for the safe custody of defectives in institutions or under guardians, subject to supervision by a board of control, of which county and borough councils are constituted committees, and further provide for the management and administration of defectives' property. In Scotland mental defectives come under the Mental Deficiency and Lunacy (Scotland) Act, 1913. See Mental Disorder.

## MENTAL DISORDER AND ITS CAUSES

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*Here is given an account of the various forms taken by mental disorder, their causation, and their treatment. For legal aspects of the subject, see Insanity. See also Psycho-analysis, Psychology, etc.*

Mental disorder is a medical term which includes all forms of abnormality or ill-health of the mind. The psychoses are mental states in which the personality is seriously disturbed and in which the patient's reaction to his environment and to reality is at fault. These types of mental illness constitute what are popularly known as mental breakdowns. The psychoneuroses (or neuroses) are mental states in which there is a partial disturbance of the personality owing to mental conflict or disharmony, but in which the patient retains insight into his condition and a considerable degree of control over his behaviour. Patients in these categories are able to accept and benefit from psychotherapy. The popular name for such minor mental disorder is nervous breakdown. There is no clear-cut difference between the two forms, and the symptoms in both are evidence of some degree of failure to adjust to the conditions of life. The term mental deficiency is used where there is a

condition of arrested or incomplete development of the mind. The mentally deficient are handicapped from an early age, often from birth, either constitutionally or as a result of disease or injury.

In considering the causation of any case of mental disorder it is necessary to take into account the factors of heredity and environment. Direct inheritance of any specific form of mental illness is not common, but in those who spring from a stock of marked mental or neurotic instability heredity plays an important part as a predisposing cause. In such persons the resistance to stresses, whether they be mental (e.g. fears, losses, disappointments) or physical (e.g. infections, injury, disease), is materially lessened and a breakdown results the more readily. It is true, however, to say that if the stress or strain is sufficient the breaking-point may be found in any individual. So every case of mental disorder, whatever the degree, should be considered in detail from the point

of view of (1) family history, (2) bodily or physical condition, (3) psychological background.

The Mental Treatment Act (1930) was a great step forward in bringing the medical treatment of mental disorder more nearly into line with that of other forms of illness. Under Section I treatment on a purely voluntary basis is possible for "any person who is desirous of voluntarily submitting himself to treatment for mental illness and who makes a written application for the purpose." He can then be received into any hospital, nursing home, or place approved by the board of control without a reception order, and he may leave at any time by giving 72 hours' notice in writing of his intention to do so. This period of time is solely for the purpose of notifying the relatives of the patient's decision to leave the place of treatment. During 1947 approx. 50 p.c. of patients admitted to county or county borough mental hospitals were received on a voluntary basis, i.e. they had sufficient understanding to enable them to be willing to receive treatment.

Under Section V of the Mental Treatment Act (1930) certain patients who (a) suffer from mental illness, (b) are likely to benefit by temporary treatment, (c) are for the time being incapable of expressing themselves as willing or unwilling to receive such treatment, may, after a written application of a near relative (or an authorised officer of the local authority) and without a reception order or any legal formality, be received into hospitals or approved homes for a period of six months. Two medical recommendations, one signed by the usual medical attendant and the other by a practitioner approved by the board of control, accompany the application. From the medical point of view cases which are strictly suitable for admission within the meaning of this section of the Act as temporary patients are some of the most acutely ill and yet the most hopeful as regards recovery. Some 14 p.c. of admissions come under this heading.

Even when the facilities for voluntary and temporary treatment are utilised fully, there yet remain, in the present state of the law, 35-40 p.c. of patients for whom certification with legal formalities is necessary because by reason of the nature of the disability the patient can have no proper insight and therefore must be considered to be "unwilling."

The classification of mental disorder is not an easy matter, and no entirely satisfactory scheme has yet been evolved. The following is a practical list and in the present state of knowledge may be considered as useful as any other.

I. Mental Deficiency (*Amentia* or *Oligophrenia*). (a) Idiocy. (b) Imbecility. (c) Feeble-mindedness. (d) Moral Deficiency.

II. Neuroses and Psycho-Neuroses. (a) Neurasthenia (exhaustion neurosis). (b) Anxiety states. (c) Hysteria. (d) Compulsions, obsessions, and phobias.

III. Schizophrenic Psychoses. (a) Dementia Praecox. (b) Paraphrenia. (c) Paranoia.

IV. Psychopathic Constitution.

V. Affective (Emotional) Psychoses. (a) Manic-depressive Psychosis. (b) Involuntional melancholia.

VI. Psychoses with toxins or infections.

VII. Epileptic Psychoses.

VIII. Psychoses with organic brain disease.

IX. Psychoses with other organic bodily disease.

X. Senile or Pre-Senile dementia.

#### Psychological Methods

The treatment of the neuroses is by some form of psychological method (psychotherapy), which aims at solving the problems or mental conflicts that harass the patient—suggestion, persuasion, reassurance, explanation, psychoanalysis, and re-education are the methods used by psychotherapists. Such treatment, for the most part, may be carried out successfully without admission to hospital; but some of the more difficult cases require a period of institutional treatment. On the other hand the main need for the psychoses is hospital treatment, although early diagnosis in an out-patient clinic is the first step. Methods include certain physical treatments, used in carefully selected cases, e.g. shock therapy by cardiazol or electrically produced convulsions; prolonged narcosis; insulin therapy; surgical operations on the brain, termed prefrontal leucotomy. Thorough physical examination of the patient followed by treatment of any abnormal bodily condition must accompany any specific therapeutic measure designed to alleviate the mental illness. Skilled and specialised nursing is also necessary, with occupational therapy to assist rehabilitation.

The treatment of cases of mental deficiency is summed up in early recognition of the disability

and concentration on training suitable for the individual child.

Advice and treatment in psychiatric clinics, especially in those equipped for dealing with mal-adjusted children, can assist in the prevention of serious mental illness. Developments in social medicine are also needed towards the same end.

**Mental Hospital** OR **MENTAL INSTITUTION**. Institution for the treatment of those suffering from all forms of mental disorder. Until the National Health Service Act, 1946, came into effect, July, 1948, and all hospitals became the responsibility of the ministry of Health, county and county borough mental hospitals supplied the need for rate-aided patients, the term used for those who were unable to afford private fees. Registered hospitals, founded as charitable institutions, maintained by bequests, voluntary contributions, and fees of paying patients, and managed by committees, catered for those of limited means.

Private mental homes (licensed houses), owned by individuals, charge fees according to the accommodation; they provide treatment. A patient may be received, under certain regulations, in "single care" in a private house. In all cases patients under care and treatment are visited and reported upon by the commissioners of the board of control. Under the Home office, an institution for insane criminals exists at Broadmoor.

Those suffering from mental deficiency are treated in certified institutions maintained at public expense unless their parents or guardians can pay the fees charged by certified houses under private management. There is provision for criminal or dangerous mental defectives in state institutions.

Some cases of mental deficiency can be boarded out under guardianship (Mental Deficiency Acts 1913 and 1927). See *Insanity*; *Mental Disorder*.

**Menteith**, LAKE OF. Lake in the S.W. of Perthshire, Scotland. It is 17 m. W.N.W. of Stirling, 1½ m. long and 1 m. broad, and is the only sheet of water in Scotland termed a lake. It contains three islands, one of which, Inchmahome, are the remains of a priory, the residence of Mary Queen of Scots in 1547-48, and on another, Inchalla, the ruins of a stronghold of the earls of Menteith.

**Menthol** (C<sub>10</sub>H<sub>20</sub>O). Crystalline constituent of peppermint oil, which deposits from the oil on long keeping or cooling to a low temper-

ature. It is also known as peppermint camphor and is classed as a stearoptene. The peppermint plant is cultivated in England, China, Japan, and the U.S.A., but the menthol content of the oil distilled from the plants varies according to the locality and variety of the plant. The Japanese peppermint is the *Mentha arvensis* var. *piperascens*, and the oil contains such a large proportion of menthol that it is solid at ordinary temperatures. The application of cold ensures the complete separation of the menthol, the liquid oil being removed by pressing the crystals. Menthol has a local anaesthetic effect in cases of neuralgia. It finds uses in confectionery and perfumery.

**Mentone** (Fr. Menton). Health resort of France, in the dept. of Alpes-Maritimes. It is on the coast of the Riviera, 14 m. N.E. of Nice. The neighbourhood is noted for its orange and lemon groves. Owing to its mild climate and charming surroundings, it is visited by thousands every year. There is a casino, with a winter garden, skating rink, and other attractions, several promenades, including the promenade du midi, beautiful pub-



Mentone arms



Mentone. Popular health resort of the French Riviera

lic gardens, a museum, etc. St. Michael's Church has been largely rebuilt. The old town has a harbour. Since 1861, when the prince of Monaco sold his rights, it has been French. Olive oil and perfumes are exported.

During the Second Great War Mentone was occupied by the Italians, June 24, 1940, but was "returned" to France by the Germans, and occupied by them, Sept., 1943, after the Italian surrender to the Allies. Allied landings, under cover of naval bombardment, were made in the area on

Sept. 8, 1944: the town was liberated by U.S. forces, Sept. 24.

**Mentor.** In Greek mythology, the faithful and prudent friend to whom Odysseus, when he left home for the Trojan War, entrusted the care of his affairs and the education of Telemachus. Mentor has become synonymous with a wise counsellor.

**Mentzelia.** Genus of herbs, of the family Loasaceae, natives of the warmer parts of America.



Mentzelia. Leaves and flowers of this American herb. Inset, single flower

They have coarsely toothed leaves, and large orange or white flowers, which expand only in sunshine. *M. bartonioides*, with yellow flowers containing a profusion of stamens twice the length of the petals, is a very showy annual.

**Menufiyeh.** Province in Lower Egypt. It contains the districts of Ashmun, Menuf, Quesna, Shihin-el-Kom, and Tala, and comprises the S. portion of the fertile Nile delta. Area, 606 sq. m. Pop. 1,159,701.

**Menuhin, YEHUDI** (b. 1916). American violinist. Born of Jewish stock in New York, April 22, 1916, he received his musical training from Persinger at San Francisco, Georges Enesco in



Yehudi Menuhin, American violinist

Paris, and Adolf Busch in Switzerland. At seven he appeared as violin soloist with the San Francisco symphony orchestra; at eleven he played in Paris and with the New York symphony orchestra, giving brilliant performances of the Beethoven concerto. With his sister Hepzibah (b. 1921), herself a fine pianist and frequently his accompanist, he achieved world fame, and in 1929 made his Berlin debut and appeared at Queen's Hall, London. In 1935 he completed his first world tour, then retired to his Californian ranch, to return to the concert platform in 1937. During the Second Great War he raised by recitals large sums for the benefit of victims and refugees. Menuhin's playing was marked by its warm, sympathetic tone as well as virtuosity. His researches rescued from oblivion concertos by Schumann and Mozart, and Paganini's complete Urtext edition.

**Menzala, MANZALA, OR MENZALEH.** Lagoon in Egypt, extending from the Damietta branch of the Nile to Port Said and the Suez Canal. With an area of about 400 sq. m., it is separated from the Mediterranean by a narrow strip of sand through which are several openings, and contains several small islands, including Tannis or Tennessee, the ancient Tennesus. The lake produces fish and salt.

**Menzel, ADOLF FRIEDRICH ERDMANN VON** (1815-1905). German artist. Born at Breslau, Dec. 8, 1815, he executed pen-and-ink drawings for Goethe's *Künstlers Erdewallen*, 1833. Between 1839-42 he published over 400 drawings. An exhibition of his work was held in London, 1903. He died in Berlin, Feb. 9, 1905.



A. F. E. Menzel, German artist

**Menzel, WOLFGANG** (1798-1873). German author. He was born at Waldenburg, Silesia, June 21, 1798, and educated at Breslau, Jena, and Bonn. In 1825 he settled at Stuttgart, where he lived for many years. His most important works were a *History of the Germans*, 1824, Eng. trans. 1848; *German Literature*, 1827, Eng. trans. 1840; *German Poetry*, 1858; and *Europe*, 1853. He died April 23, 1873.

**Menzies.** A mining town in Western Australia, 466 miles by rail from Perth. It is the centre

of North Coolgardie and Mt. Magnet Goldfield. Pop. 2,500.

**Menzies, ROBERT GORDON** (b. 1894). Australian statesman. He was born December 20, 1894, at



R. G. Menzies,  
Australian statesman

Jeparit, Victoria, and educated at Grenville College, Ballarat, and Melbourne University. Menzies practised as a barrister and entered the Victorian parliament in

1928, going to the Federal House of Representatives in 1934. He was Commonwealth attorney-general, 1935-39, and prime minister of Australia, 1939-41. Leader of the opposition from 1943, he became premier of the 1949 coalition govt. He was made a privy councillor in 1937.

**Mepacrine.** Another name for the quinine substitute Atebrin (*q.v.*).

**Mephistopheles.** In German legend, the familiar spirit attendant upon Faust. He is summoned, with terrible incantations, by the doctor, as recorded in the old History of Dr. Faustus. Frequently misunderstood as being Satan himself, he is properly a subordinate demon. The name, perhaps of Hebrew origin, is found in Shakespeare's *Merry Wives of Windsor* in the Grecoised form Mephostophilus, *i.e.* not loving light. See Faust.

**Meppel.** Town of the Netherlands, in the prov. of Drenthe. It is situated on the Meppeler Diep and other waterways, 16 m. by rly. N.N.E. of Zwolle, and is the junction of the Leeuwarden and Groningen lines. Pop. 12,133.

**Mequinez** or **MEKNES.** City of Morocco. It is 34 m. W.S.W. of Fez, and lies in a fertile valley with the forested slopes of the Middle Atlas at the S.E. Under the French régime, Mequinez and the other Moroccan cities in the French zone have been extended, the native and European sections being kept separate. Pop. 109,500.

**Merano.** Inland health resort of N. Italy,

in the Trentino. The German name is Meran. It is 15 m. N.W. of Bolzano (Bozen) on the Passer, a tributary of the Adige. In the neighbourhood is the half-ruined castle, the earliest residence of the counts of Tirol. The district is noted for its orchards and vineyards. Pop. 19,000.

**Mercantile Agent.** An agent who in the ordinary course of his business has authority to sell or buy or raise money on the security of goods. Both factors and brokers are mercantile agents. A sale by him of goods in his possession may be binding on his principal even though the sale was unauthorised.

**Mercantile Law.** In England, the law as it especially affects merchants, *i.e.* people whose business it is to buy and sell. At one time the Law Merchant (*q.v.*), as it is properly called, only affected traders; but now it is universally binding. Within the province of mercantile law falls the law relating to negotiable instruments, which indeed are negotiable only by the usages of merchants. Besides cheques, bills of exchange, and promissory notes, any other instrument may become negotiable by the universal usage of merchants who deal in them, unless such negotiability is in some way opposed to their terms. The sale of goods, mercantile contracts of carriage, involving charter-parties, bills of lading, freight notes, contracts of marine insurance, are also part of mercantile law; and so are contracts of commercial agency, involving the law as to brokers, factors, warehousemen, and the like.

The main feature of mercantile law is that it is made up almost entirely of the customs and usages of traders. No one, however, will be entitled to rely on a usage against commercial morality—as where a broker on the tallow

market proved that it was the custom for brokers in that market to buy large parcels of tallow, and then, when they received orders to buy for customers, to allot some of their own tallow to meet the order at market price. The court held that no man employed as an agent to buy could sell his own goods to his principal, because it was contrary to morals.

**Mercantile System.** Name given, especially by writers of the 18th century, to attempts to secure by artificial restrictions an excess of exports over imports. Until comparatively recent times it was generally believed that a country's wealth consisted solely of gold and silver. This belief gave rise to repeated prohibitions in most European countries, from Cicero's time to that of Henry VIII, against the export of coin or bullion. But in 1600 the E. India Co. obtained permission to export foreign coin or bullion to the amount of £30,000 a year, on condition that an equal amount was imported after the return voyage. This concession was supported by the argument that most of the commodities brought to England were re-exported, thus bringing back in exchange more bullion than was required for their original purchase. From this arose the theories of the balance of trade and of the desirability of ensuring an excess of exports over imports. In 1663 the prohibition against the export of foreign coin and bullion was removed by parliament. See Exchange; Free Trade; Freezing; Political Economy; Protection; Tariff Reform.

**Mercaptans** or **THIO-ALCOHOLS.** Name given to a class of organic chemical compounds, constituted like alcohols, but with the oxygen of the hydroxyl group replaced by sulphur. The liquids of the group are colourless, with most offensive odours. They may be made by the action of potassium hydrosulphide on alkyl halides.

**Mercator, GERARDUS** (1512-94). Flemish geographer. His real name was Gerhard Kremer. Born at Rupelmonde, March 5, 1512, he graduated at Louvain, and devoted himself to mathematics and geography. In 1534 Charles V employed him as cartographer in his campaigns. His survey of Flanders was made 1537-40, his Map of the World in 1538, and in 1541 he constructed his terrestrial globe. In 1552 he went to Duisburg, and in 1559 became cosmographer to the duke of Cleves. In



Merano. General view of this Italian health resort



Gerardus Mercator,  
Flemish geographer

1568 he produced the first maps on his system of projection with parallels and meridians at right angles known as Mercator's projection, or gnomonic projection

(*q.v.*) Other maps followed, and in 1585 the first portion of his atlas was produced. He died at Duisburg, Dec. 2, 1594. *See* Map.

**Mercedario.** Peak of the Andes in S. Chile. It reaches a height of 22,000 ft.

**Mercedes.** (1) Town of Argentina, in the prov. of Buenos Aires. It stands in a plain, 56 m. by rly. W of Buenos Aires. A rising town, it has steam mills and soap works. There is a large Irish colony. Pop. 40,000. (2) Town of Argentina, in the prov. of San Luis, 54 m. by rly. E.S.E. of San Luis city. Pop. 22,800. (3) Town of Uruguay, the cap. of the prov. of Soriano. It stands on the Rio Negro, 21 m. E.S.E. of Fray Bentos. It is a popular health resort, with many fine buildings, and carries on a large trade in animal products, chiefly wool. Pop. 24,000.

**Mércédès-Benz.** German engineering firm. From the very early days of motoring the names of Mércédès and Benz have been renowned. The Mércédès cars gained a reputation for advanced features of design and were among the fastest standard cars in the world, the racing models attaining successes in many classic races. The firm also made aero and Diesel engines which were extremely efficient. One of the principal factories at Mannheim was destroyed by Allied aircraft during the Second Great War.

**Mercenary** (Lat. *mercenarius*, from *merces*, reward). Term applied specifically to a soldier who hired his services to any state or prince that would employ them, or who was so hired out by the sovereign to whose army he belonged. Mercenaries were used by Greece and Rome, and the employment of barbarian troops was one of the chief causes of the downfall of the Roman empire. In the 16th century Coligny and the Huguenot leaders hired Protestant English and Germans to fight against the French Catholics under the duke of Guise, who engaged Swiss troops. These soldiers of fortune were apt to mutiny when their pay was in

arrears, though pillage was regarded as one of their emoluments. On being disbanded they often took to brigandage. In the 18th century the British Government employed Hanoverian and other German troops, who were hired out by their own sovereigns. The German Legion attached to Wellington's army in Spain bore a high reputation. After the introduction of conscription by Prussia it was common for German writers to refer to the British and American armies as "mercenaries," because the men were more highly paid under the free contract system called enlistment (*q.v.*).

**Mercer.** Person whose business consists in retailing silks, velvets, and other rich stuffs. The term seems to have applied at one time to dealers in any textiles, but the differentiation between mercer and draper was very early made. *See* Mercers' Company.

**Mercer, JOHN** (1791-1866). English dye chemist. Born at Dean, near Blackburn, Feb. 21, 1791, he was apprenticed in 1809 at the Oakenshaw Print Works, where he studied dyeing. He was almost entirely self-educated, but made many important discoveries connected with dyeing and calico printing, and he is chiefly known for the invention of mercerisation (*v.i.*). Elected F.R.S. in 1852, Mercer died Nov. 30, 1866.

**Mercerisation.** A process by which cotton is given a silky lustre or sheen resembling silk. It derives its name from John Mercer, who patented his discovery, in 1850, of the action of alkalis upon vegetable fibres. When cotton fibres are immersed in a strong bath of caustic soda, their structure is altered, the fibres becoming thicker and shorter. If, however, the fibres are kept at a tension and washed, the material takes on the characteristic sheen. Not only is the appearance of the cotton improved, but it gains a greater affinity for dyes. Mercerising is done either upon yarn or upon the cloth. The latter, after being impregnated with dye and allowed to contract, is pulled out to its former width upon a stentering frame, sprayed and washed. By treatment with acids mercerised cotton has been made to imitate silk very closely. *See* Cotton.

**Mercers' Company.** Premier livery company of the city of London. Originally a guild of dealers in small wares, i.e. articles sold retail by the little balance, and then vendors of silks and velvets, the Mercers are first mentioned as

a guild in 1172. The company of Merchant Adventurers arose from this guild in 1296, and down to 1526 the two organizations recorded their transactions in the same books. The Mercers' parent charter, one of ten, was granted in 1394. Its members have included Sir Richard Whit-



Mercers'  
Company arms

tington, Sir Geoffrey Bullen, great-grandfather of Queen Elizabeth, Sir Henry Colet, father of Dean Colet, Sir Thomas Gresham, Sir Hugh Clopton, Sir Richard Gresham, and Sir Baptist Hicks, later Viscount Campden, and also Richard II, Queen Elizabeth, Edward VII, George V, Edward VIII, and George VI.

The company governs S. Paul's School, now at Hammersmith, and the Mercers' School, now occupying the site of Barnard's Inn, Holborn; and in addition to administering many other important charities, is trustee in perpetuity of the estates of Sir Richard Whittington and Dean Colet, the founder of S. Paul's school. The arms, including a figure of the Virgin, and the precedence of the company are the subject of a song written in 1686. In 1519 the company erected a chapel and hall next to S. Thomas of Acon's church in Cheapside; at the dissolution of the monasteries the company purchased the site of the hospital of S. Thomas of Acon. The hall and much other property was burnt in 1666, involving the company in debt until 1804. The hall was rebuilt in 1672 and in 1941 it was destroyed in an air-raid. With valuable portraits and other relics the company possesses in the Leigh Cup a fine example of English medieval plate. The Mercers' School originated as a school attached to the hospital of S. Thomas of Acon. A condition of acquiring this hospital was that the company should maintain the school. Address: 4, Ironmonger Lane, London, E.C.2. *Consult* The Worshipful Company of Mercers, E. W. Brabrook, 1889; The Mercers' Company, Sir John Westway, 1914; Mercers' Hall, A. E. Royden, 1947.

**Merchandise Marks Act.** British statutes designed to protect manufacturers against imitations of their marks. The Merchandise Marks Act of 1887 made it an offence falsely to apply to goods any trade mark or description. That of 1926 required all imported goods bearing the name or



trade mark of a British manufacturer to indicate also where the goods were made.

**Merchant.** Person whose business is the purchase and sale of commodities. In modern English the term is applied only to wholesale dealers, i.e. intermediaries between the manufacturer and the retailer whose profits are not restricted to brokerage, and to those who purchase foreign goods direct from abroad, or from importing houses for distribution to the home trade. See Broker.

**Merchant Adventurers.** Name of an English regulated company for the conduct of foreign commerce. The exact date of its foundation is uncertain, but its growth coincided with the great development of the English cloth trade in the 14th century. Chiefly concerned with the export of cloth, its members were the leading merchants from all parts of England, and its foreign staple or trading centre was fixed at Bruges by Edward III in 1344. In 1407 they acquired the right of choosing their own governor; in 1501 a charter gave them rights of managing their own trade and of punishing those who broke their rules. Leaving Bruges for Antwerp, they gradually obtained privileges in other Netherlandish towns, and in 1578 they moved their foreign headquarters to Hamburg. Expelled thence by the influence of the Hanseatic League (*q.v.*), in return for which the English expelled the Hanse traders from England in 1597, they afterwards recovered their position in Hamburg. The constitution of the Merchant Adventurers formed the model for many similar associations of great commercial importance, e.g. there were companies of Merchant Adventurers at Bristol and at York. See Staple.

**Merchant Aircraft Carrier.** Type of small escort vessel developed in the Second Great War to combine the function of cargo vessel and aircraft carrier. They were generally grain ships or oil tankers fitted with flight decks for the take-off and landing of fighter aircraft. They were operated by Fleet Air Arm pilots. Introduced in 1943, merchant aircraft carriers played an exceedingly important part in defeating the U-boats in the battle of the Atlantic by providing air cover for themselves and other vessels negotiating the passage through the 500-mile "air gap" which at that time was out of range of land-based aircraft. See Aircraft Carrier.

## MERCHANT NAVY OF GREAT BRITAIN

W. E. Stanton-Hope, F.R.G.S.

*The history, from its beginnings, of the seafaring service which has carried British trade and influence all over the world. Other articles bearing on the subject include Blue Ensign; Lifeboat; Lloyd's; Lloyd's Register of Shipping; Red Ensign; Trade, Board of; Transport, Ministry of*

The name merchant navy is given to shipping engaged in commerce. It includes all sea-going vessels that convey passengers and/or cargo; also cable ships, tugs, etc. Those employed in this service are described as members of the merchant navy. The flag worn by British merchant vessels is the red ensign, or, in ships manned by a stipulated proportion of Royal Naval reserve officers and ratings, the blue ensign.

Formerly the service was known as the mercantile marine. The change in name was made in April, 1928, when George V created the new office of Master of the Merchant Navy and Fisheries, and appointed the then prince of Wales to be its first holder.

From the reign of Richard II, the English shipping industry has been assisted by protective legislation. In the 17th century the merchants benefited by the Navigation Acts designed to eliminate foreign competition. These Acts provided among other conditions that no cargoes could be brought to England from, or exported from England to, many parts of the world except in English ships.

### Freedom of the Seas

The substantial development of England's commercial sea-power, however, dates from the declaration of Elizabeth that "the use of the sea and air is common to all, and no title to the ocean can belong to any nation..." Thereby defiance was given to "the closed sea" policy of Spain and Portugal, the great maritime powers of that period who claimed sovereignty over the seas discovered by their pioneer navigators. Not long afterwards (in 1577) the new era of "the freedom of the seas" was inaugurated by Drake who sailed from Plymouth in the Pelican, 120 tons (later renamed the Golden Hind), the largest of five ships of a squadron that set out to circumnavigate the world.

An early result of the declaration was that English merchants formed companies—the famous Merchant Venturers among the number—and sought charters for trading privileges in distant parts of the globe. The East India Co., greatest and most enduring of all, was granted a charter by Queen

Elizabeth in 1600, and built a fleet of ships which were armed as a defensive measure.

When England was threatened by war in the Middle Ages and under the Tudors, it was not unusual for small coasting vessels and fishing craft to be commandeered for troop transports. Structures of wood were added fore and aft to serve roughly the purpose of fighting-tops. These were known as "castles," probably an ironic term, but one that survives in the word forecastle (usually abbreviated to fo'c'sle).

### Decline and Recovery

British shipping suffered a decline in the first half of Victoria's reign. Many ships were ill-found, and indiscipline and inefficiency were not uncommon among merchant officers and crews. Traders claimed that the Navigation Laws, designed against foreign seaborne trade, had become a handicap rather than a help, and they were repealed gradually, the last being abolished in 1854. From that date British shipping embarked on an era of prosperity, partly due to the stimulus of keen competition, but chiefly to the industrial revolution at home and the vast new markets that it opened overseas.

The average size of British merchant ships increased only by 80–100 tons during the 18th century; before the close of the 19th there were vessels afloat of several thousand tons. The period 1800–1900 witnessed the heyday of sail and the coming of steam. The fast clippers and other sailing craft produced generations of hardy seamen. Great Britain seized the opportunities in ship-building offered by the substitution of iron and steel for wood, of engines for sail, and the high standard of efficiency in the British merchant navy of today is due in large measure to the unequalled skill of British shipbuilders and marine engineers.

### The First Great War

Almost immediately after the outbreak of war on Aug. 4, 1914, the Admiralty acquired 22 liners for conversion to auxiliary cruisers, and a large number of merchant officers and ratings transferred to service under the white ensign. At least 100 such auxiliary

cruisers were on active service during the First Great War, and a similar number of cargo vessels were in commission as "mercantile fleet auxiliaries." The latter class performed the duty of supplying stores and other necessities to warships of the fleet. Pleasure steamers and innumerable fishing craft—steam trawlers and drifters—were used for minesweeping or anti-submarine patrol. A total of 4,696 merchant ships, totalling 9,412,275 gross tons, were lost during that war. Of these 915, representing 1,048,498 tons, became casualties owing to storm, fog, or other causes officially classed as acts of God. The rest were lost through enemy action; 14,287 officers and ratings sacrificed their lives. But for the introduction of the convoy system in 1917, the losses of ships and men might have continued on a scale fatal to Britain's chance of victory. Honours won by members of the British merchant service totalled 1,519, including six V.C.s. In 1919 George V awarded the British war medal to those who had served at sea for not less than six months during the period of hostilities. A mercantile marine medal was granted also to those with not less than six months' wartime service at sea who, in addition, had served for at least one voyage through an officially recognized danger zone.

#### Between the Wars

The vessels to standardised design built during the war for specific purposes proved unsuited to trade requirements of peacetime; the depleted British merchant fleet was out-of-date and inadequate to meet post-war demands. Feverish activity in the shipyards produced new keels at appallingly high prices. Favourable conditions for seaborne trade, however, proved only a flash in the pan. A temporary boom was followed by a sharp slump in 1921.

By 1934 the position was desperate. The owners of tramp cargo-carriers were hardest hit, and a distressing spectacle was provided by the scores of tramp steamers and cargo liners rusting at their anchors in the estuaries around the British coasts. The companies owning passenger liners also suffered in the general depression of the 1930s, and endeavoured to bolster business by running holiday cruises. Not only were shipyard workers thrown out of work, but thousands of officers and men of the merchant service were among the unemployed.

#### The Second Great War

On the outbreak of the Second Great War in Sept., 1939, the merchant tonnage under the British flag was dangerously inadequate. Fortunately, there were about 8,000,000 tons of Allied, neutral, and enemy shipping in U.K. ports. Much of this was used to supplement the British merchant navy in its task of conveying troops, munitions, food, etc., while ship-building yards at home and overseas expanded their facilities for launching new keels.

Twice within 25 years the officers and men of the merchant navy faced the perils of enemy submarines, mines, and surface raiders and, in the Second Great War, hostile aircraft. Fewer ships were lost in the Second than in the First Great War, though, owing to the greater size of vessels, the tonnage lost was greater. In the Second Great War the convoy system was brought promptly into operation, and counter-measures against U-boats were more effective through the use of aircraft, radar, rockets, and other new inventions. Many merchant vessels also had their crews reinforced by highly trained personnel of the D.E.M.S. organization (Defensive Equipping of Merchant Ships).

Control was vested in the ministry of Shipping, later called the ministry of War Transport.

British merchant vessels (excluding fishing vessels) lost by enemy action during the Second Great War numbered 2,426 with a gross tonnage of 11,331,933. Of these 1,332 (7,595,645 gross tonnage) were destroyed by U-boats, 296 (816,255 gross tonnage) by mines, 209 (969,087 gross tonnage) by surface craft, 383 (1,575,230 gross tonnage) by aircraft, and 206 (375,716 gross tonnage) by other or unknown causes. Losses year by year were:

	No. of ships	Gross tonnage
1939 ..	96 ..	419,015
1940 ..	548 ..	2,435,667
1941 ..	717 ..	2,824,056
1942 ..	646 ..	3,459,923
1943 ..	273 ..	1,514,221
1944 ..	103 ..	489,040
1945 ..	43 ..	190,011

In addition, 136 fishing vessels (24,525 gross tonnage) were lost, 55 of them in 1941.

Deaths of seamen of all nationalities who served in British ships, and of British seamen who served in foreign ships chartered or requisitioned by the British government, from Sept. 3, 1939, to Aug. 31, 1945, totalled 29,180 in merchant, plus 814 in fishing vessels.

In both wars, the courage and skill of merchant navy officers and men in defensive action against the enemy, and their resolution in salvaging damaged ships, proved an important factor in reducing losses. Those who served under the red ensign retained status as civilians, but by special dispensation certain decorations for exceptional gallantry previously reserved for the military services, were awarded also to members of the merchant navy. Honours won in the Second Great War by members of the merchant navy and the fishing fleet totalled 8,449, among them five George Crosses.

As a result of the Second Great War, 109 enemy merchant vessels were added to the merchant navy. This figure covers dry cargo vessels and tankers of 500 gross tons and over, flying the British flag on July 31, 1947. Other ships were allocated but had not been transferred by that date.

#### Improving the Seaman's Lot

The claim that it needed two world wars to improve the lot of merchant seamen may appear a cynicism, but it is not without a strong foundation of truth. In the past, wages were on a parsimonious scale, and men had no guarantee of regular employment. The food was monotonous and poor, the accommodation in many ships deplorable. Much talk of "coffin ships" was heard during the 19th century, and the belief persists that there was an almost universal disregard of seafarers' interests. The truth is that from 1850 onwards, parliament appointed numerous commissions to inquire into mercantile marine affairs and passed many Acts with the object of improving conditions. Reputable shipowners, too, recognized the need for reforms.

Famous among Victorian agitators on behalf of merchant seamen is Samuel Plimsoll, a member of parliament and a landsman. His name and accomplishment are commemorated in the Plimsoll mark painted on the hull of every ship on Lloyd's Register; this mark indicates the lowest level to which the vessel can safely be sunk in the sea, and is intended to prevent overloading. J. Havelock Wilson, who founded the national sailors' and firemen's union in 1887, did much to improve wages, food, accommodation, and safety arrangements at sea. He it was who secured the introduction of trained cooks in all British ships except the smallest types. From his original organization developed

the exceedingly powerful National Union of Seamen.

Between 1890 and 1903 there was an increase of foreign seamen in British ships from 27,000 to 40,000, and a decrease of British of about 10,000. By 1912 there were 9,000 fewer foreign and 30,000 more British seamen. The estimated strength of the merchant navy in 1914 was 48,500 officers and 151,500 ratings, plus about 50,000 Indians, Chinese, and others. In 1919 there were 35,000 officers and 142,000 ratings, plus about 45,000 Indians, etc. In 1938 a census of employed seamen gave 27,020 officers and 87,111 ratings, plus 45,182 Indians, etc. In 1947 the total strength of the merchant navy was estimated to be 41,000 officers and 84,000 ratings, plus approx. 35,000 Indians, Chinese, and others.

#### Seamen's Organizations

Through many decades British shipping has benefited by the institution of Lloyd's, and the board of Trade has acted as avuncular authority to the industry. Shipowners and their associations are represented by the Shipping Federation. The interests of shipmasters are represented by the Mercantile Marine Service Association, officers by the Navigators and Engineer Officers Union and the Radio Officers Union. These three organizations cooperate with each other, and with seven other British officers' organizations overseas, through the Officers' (Merchant Navy) Federation, which secured the introduction in 1938 of the M.N. Officers Pension Fund, to which shipowners and officers jointly contribute toward pensions payable at the age of 65.

Some improvements in seagoing conditions made voluntarily by the shipowners have been of a revolutionary nature. For example, the New Zealand Shipping co., in their refrigerated meat-ship *Hororata*, provides two and four-berth cabins amidships for its seamen. An air-conditioning system keeps the quarters warm in cold weather and cool in the tropics. The cabins have hand-basins with hot and cold water. The dining-saloons and mess-rooms radiate about a large galley where food is cooked by electric grills and ovens.

In 1947 a far-reaching agreement negotiated by the National Maritime Board on behalf of shipmasters, officers, ratings, and the shipowners was ratified; it included (1) standard rates of pay, that *e.g.* for an able seaman being

£20 per month in a ship where food is provided free; (2) the principle of a progressive wage with increased length of service; (3) the introduction of a scheme to make sea service a stable and continuous career; (4) the provision of leave with pay; (5) reduction of working hours in certain categories and increases in overtime pay.

#### Welfare Work

In bygone days the British mercantile marine recruited many fine, adventurous youths, but was regarded also as a refuse dump for misfits and delinquents. That phase is over. Recruits are selected with care and many enter from training-ships and sea schools. There was a time, too, when a sailor's well-being ashore was heeded by few save well meaning members of Christian missions. But tea and tracts, however generously provided, still left much to be desired. The establishment of the Seamen's Welfare Board early in the Second Great War led to the introduction of many amenities for seafarers ashore. The ministry of War Transport sponsored clubs and canteens overseas. Religious organizations and other voluntary bodies did much good and highly appreciated work in providing comforts and recreational centres.

Residential and non-residential clubs, etc., for men of the Merchant Navy include the former Bedford Head hotel in London; the Henry Radcliffe convalescent home in Surrey; Springbok village, Surrey, acquired by funds subscribed mainly in S. Africa, for retired and disabled seamen. The Seafarers' Education Service provides libraries in ships, and its associated college conducts courses by correspondence in English literature, modern languages, music, astronomy, etc.

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**Merchant of Venice, THE.** Romantic comedy by Shakespeare. The chief character is the Jew, Shylock, who demands from Antonio, a merchant, a pound of flesh in forfeiture of a debt of money. The central scene is the trial in which Portia, disguised as

a doctor of law, turns the tables on the Jew.

This play was first published in quarto in 1600. A second quarto that year provided the text for the 1623 folio. Other quartos were issued in 1637 and 1652. Mentioned by Meres in 1598, parts of the story are found in the *Gesta Romanorum*, partly Englished by Robinson in 1577; The Adventures of Giannetto in Giovanni Fiorentino's *Il Pecorone*, 1378, first published 1558; The Orator of Alexandre Silvayn, Englished by Munday, 1596; Robert Wilson's play, *The Three Ladies of London*, 1584; and two old ballads, *Gernutus a Jew* (in Percy's *Reliques*) and *The Northern Lord*, quoted by W. C. Hazlitt in Shakespeare's Library.

The rôle of Shylock was once acted as a low comedy part. Now it is usually assumed that the speech "Hath not a Jew eyes?" etc., represents a plea for recognition of the dignity of all men irrespective of race. Of modern interpretations of the character the most idealised was by Henry Irving, at The Lyceum, 1879, when Ellen Terry was Portia. The play contains 2,705 lines, including 673 prose, 1,896 blank verse, and 93 pentametric rhymes.

**Merchant Shipping Acts.** Statutes regulating various matters connected with the mercantile marine. In Great Britain the Merchant Shipping Act, 1894, is a statute of 748 sections and several appendices or schedules. It has been modified by later Acts.

These are intended to be a code of sea-law, and apply to a large number of subjects. Among these are: the registration of British ships, their transfer on sale or mortgage, their names, and the general liability of owners; the national character and flag; measurements and tonnage; the engagements, rights, duties, rating, pay, privileges, feeding, and sleeping of masters and seamen; volunteering into the navy; discipline on board ship; the regulation of passenger and emigrant ships; the carriage of dangerous goods, cattle, and military stores; overloading; passengers' contracts; fishing-boats, their registry; pay and discipline of fishermen and apprentices; certain apprenticeship agreements; special provisions as to trawlers; "rules of the road" at sea, and collisions generally; life-saving appliances; penalties for and prevention of sending unseaworthy ships to sea; the "survey" of ships; the limitation of a

ship-owner's liability for damage to goods; wreck and salvage; lighthouses; pilots and pilotage.

As for seamen, the object of the Acts is to secure for them just treatment, protection from "crimps" and others who prey upon them, and the prevention of such atrocities as leaving seamen sick and stranded on foreign shores. The Acts also try to prevent the provision of rotten tackle and other practices dangerous to the life of the sailor. As the result of international conventions Acts have been passed to secure uniformity in the laws of the world relating to shipping.

**Merchants' Marks.** Term used in heraldry. From remote antiquity individual and associated merchants adopted marks to distinguish their goods. In time these were engraved on seals, and so in a way were substituted for the badges, crests, and other insignia of the knights and squires. In the 16th and the early 17th century many rich merchants impaled shields bearing their marks with the arms of their wives, others quartered them with armorial bearings, and so a number of such marks were adopted as heraldic charges. According to heralds such marks could only be placed on round shields; but the court of chivalry failed to enforce that.

**Merchant Taylors' Company.** Seventh in order of precedence of the twelve great livery companies



Merchant Taylors' Company arms

of the City of London. Founded as a guild of S. John the Baptist, it received its first licence as a fraternity of Taylors and Linen Armourers from Edward I, in 1300, and the first of its numerous charters from Edward III in 1327. It was incorporated by Henry VII as a fraternity of merchant taylors, and until the 11th year of Richard II the master was styled the Pilgrim and the wardens purveyors of alms. Arms were granted in 1480. In the 14th century it had a chapel in S. Paul's Cathedral. It contributed to the Ulster adventure of James I, and entertained that monarch at a banquet, for which Ben Jonson wrote the dramatic entertainment. Its first meeting-place was in Basing Lane. The site of the present hall in Threadneedle Street, E.C., was acquired in 1331. Rebuilt by E. Jerman after the fire of 1666 and damaged by fire in 1765,

the hall was reconstructed and redecorated during the 19th century, a new ceiling being installed c. 1850 and new panelling in 1893. The windows date from 1793, and new stained glass was added 1928.

One of the finest buildings of its kind in the City of London, it is notable for its stained glass, art treasures, crypt, collection of old plate, and the silver cloth yard, with which officers of the company tested the cloth merchants' meas-



Merchant Taylors' Hall, Threadneedle Street, London. Begun in 1331 and reconstructed 1844, it is notable for its stained glass, crypt, and art treasures

ures at Cloth (or Bartholomew) Fair. Possessing a corporate income of £37,000 and a trust income of £13,000, the company has contributed largely to educational institutions; it maintains almshouses at Lee, in Kent. The company granted an annuity to John Stow, the antiquary, and restored his monument in the church of S. Andrew Undershaft. See Memorials of the Guild of Merchant Taylors, 1875; Early History of the Guild of Merchant Taylors, Clode, 1888.

**Merchant Taylors' School.** English public school. Founded in Suffolk Lane, Upper Thames Street, London, in 1561, by the Merchant Taylors' Company, it was removed to Charterhouse Sq., E.C., 1873-75, and to Sandy Lodge, Northwood, Middlesex, in 1933. It is a day school for about 500 boys, with a boarding house accommodating 56, and its governors from the first have been members of the company. It is divided into classical, modern, and scientific sides, and has valuable scholarships to S. John's College, Oxford and Pembroke College, Cambridge. Spenser, Archbishop Juxon, and Lord Clive were educated at the school. During the First Great War some 1,600 former pupils joined the various services, of whom over 200 lost their lives.

The Merchant Taylors' School at Great Crosby, Liverpool, was

founded in 1618 by a London merchant taylor, and until 1910 was controlled by the Merchant Taylors' Company. It is now controlled jointly by local borough councils, the universities, and the old boys' association. New buildings were erected for the school in 1878 and these were enlarged in 1913. It is chiefly a day school, with accommodation for 500.

**Merchiston Castle School.** Public school in Edinburgh.

Founded in 1833, it was a private undertaking until 1896, when it was placed under a board of Governors. Merchiston Castle, where the school was housed from its foundation until 1930, was the residence of Napier, inventor of logarithms. In 1924 an estate of some ninety acres was purchased and a new school built, surrounded by playing fields.

There is accommodation for some 220 boarders, and a few day-boys.

**Mercia.** One of the largest of the kingdoms of England in Anglo-Saxon times. The word means the march land. At first Mercia only included Derby, Stafford, Warwick, Nottingham, and Leicester, but increased to contain everything between Thames and Humber, except East Anglia, and including London. Lichfield and Tamworth were its chief towns, and Repton, near Derby, was also an important place. The kingdom came into existence about 582. At first subject to Northumbria, in the 7th century under its famous king, the heathen Penda, it became independent, and other kingdoms were brought under its authority, making it the leading state in the land. Then came a short period of decline which lasted until Ethelbald and Offa restored Mercia to a position of pre-eminence. After Offa's death in 795 his successors were the vassals of the Wessex kings, and Mercia was conquered by Egbert in 825. Its sub-kings were ultimately replaced by earls. See Offa; Penda.

**Mercié, ANTONIN** (1845-1916). French sculptor. Born at Toulouse, Oct. 30, 1845, he was a pupil of Joffroy and Falguère. In 1868 he gained the Grand Prix de Rome. His chief works are the group Gloria Victis in Montholon Square,

Paris, 1874: the bronze group in high relief, *Le Génie des Arts*, at one of the gates of the Louvre, 1877; *Le Souvenir* on the tomb of Mme. Charles Ferry at Thann, Alsace; *Quand Même* in the Tuileries Gardens, Paris; and monuments to Bauery and Michelet in Père-Lachaise cemetery, Paris. He died Dec. 12, 1916.

**Mercier**, DESIRÉ JOSEPH (1851–1926). Belgian prelate. Born at Braine-l'Alleud, Brabant, Nov. 21,



Cardinal Mercier,  
Belgian prelate

1851, he was educated for the church at Malines, Paris, and Leipzig. Ordained in 1874, in 1906 he became archbishop of Malines and primate of Belgium, and the following year was made a cardinal. After the German occupation of Belgium he was uncompromising in his championship of the rights of the Belgian people and his allegiance to the Belgian king, and the Germans imprisoned him in his residence. He died Jan. 23, 1926. His writings include *Les Origines de la Psychologie Contemporaine*, 1897; *Métaphysique Générale*, 1905. His War memories appeared 1920. *Consul Life*, J. A. Gade, 1934.

**Mercury** (Lat. *Mercurius*, from *merx*, gain). In Roman mythology the god of trade. He was the patron deity of the guild of Roman merchants. The Romans identified him with the Greek *Hermes*. See *Caduceus*; *Flaxman*, J.; *Hermes*.

**Mercury**. Nearest planet to the sun. It revolves round the sun at a mean distance of 36,010,000 m. in a period of 88 days. The closeness of the planet to the sun makes observation of it difficult, and many of the planet's data are uncertain. Schiaparelli and others have concluded from the permanency of its markings that the period of rotation about its own axis is the same as the period of rotation round the sun, so that it always presents the same face to the latter. This is confirmed by measurements of the temperature of its sunlit face,  $770^{\circ}\text{F}$ . The dark hemisphere must be almost at absolute zero,  $-459^{\circ}\text{F}$ .

The orbit of the planet is extremely eccentric, with the result that on its nearest approach to the sun it receives more than twice as much heat as when it is at its greatest distance. The mass of the planet is one-twentieth that of

the earth, its density about three-quarters, and its diameter approximately 3,100 miles. It is improbable that Mercury has an atmosphere. Its orbit is subject to considerable perturbations, which early suggested the theory that there exists another planet between Mercury and the sun. Such a planet has not been found, however (see *Intra-Mercurial Planet*), and the observed effect is exactly accounted for by the theory of relativity, an accordance which has largely led to the acceptance of the theory. Mercury can be seen under favourable conditions shortly after sunset, or before sunrise, looking like a first magnitude star.

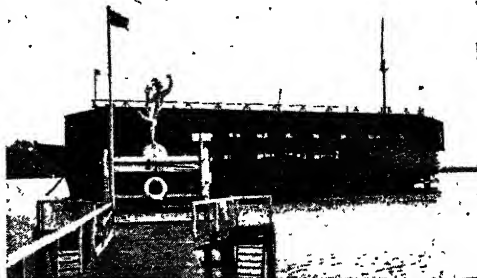
**Mercury**. British training ship. Lying at Hamble, Southampton, it was established in 1885 to prepare cadets for service as officers with the merchant navy. There is also an advanced class for those desirous of entering the Royal Navy. Commander C. B. Fry holds an honorary directorship.

**Mercury**, or **QUICKSILVER**. Silver-white metal, the only metal which remains liquid at ordinary temperatures. Chemical symbol, Hg, lying at the end of the second group of the periodic table; atomic number, 80; atomic weight,

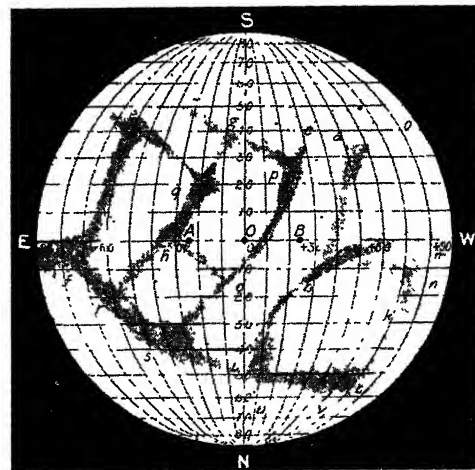
200.61; melting point,  $-38.5^{\circ}\text{C}$ .; boiling point,  $356.7^{\circ}\text{C}$ .; specific gravity, 13.56; electrical conductivity, 1.7 (silver being 100). The crystal form of the solidified metal is simple rhombohedral.

It is not affected by air, oxygen, or carbonic acid at normal temperatures, but oxidised slowly when near boiling point. It dissolves readily in nitric acid and in hot sulphuric acid. It has a remarkable power of dissolving, or combining with, other metals without the aid of heat to form amalgams, some of which have high technical and commercial importance, e.g. in dentistry.

Mercury has been known for many centuries, having been regarded until the middle of the 18th cent. as an imperfect metal or



Mercury. British training ship, primarily for the merchant navy, lying at Hamble, Southampton



Mercury. Telescopic view of the planet, as seen by the Italian astronomer Schiaparelli, showing N. and S. poles, E. and W. points, degrees of latitude and longitude, the faint streaky markings *a b c . . . w*, and the points A B the outside limits of libration of longitude each side of the centre point O

semi-metal. The Spanish mines were worked by the Greeks at least as early as 700 B.C. The medieval alchemists claimed the metal as a constituent, perhaps the vital principle, of all metals.

A little mercury is formed in nature as small globules in certain rocks, but virtually the whole of the world's production is obtained from cinnabar, or mercury sulphide,  $\text{HgS}$ . When pure this contains 86.2 per cent mercury and is bright red. It is deposited from hot aqueous solutions during periods of volcanic activity, and found in fractured rocks of many types, mostly Tertiary, comparatively near the surface.



At the present time cinnabar is being deposited from the hot springs in many volcanic regions.

The most productive and deepest mercury mine is that of Almaden (*q.v.*), in southern Spain, where work on veins has reached a depth of 1300 ft. in Silurian quartzes. Impregnations in shales and limestones are mined in Tuscany and near Trieste; and deposits are worked in California, the Ukraine, Mexico, Japan, Czecho-Slovakia, and elsewhere. Other ores occur in small quantities, *e.g.* horn quicksilver or calomel, a chloride; coccinite, the iodide; tiemannite, the selenide; coloradoite, a telluride; arguerite, native amalgam with silver (found in Chile); and other amalgams with silver, gold, and copper. None of these is as important as cinnabar.

#### Treatment of the Ores

Because of their low mercury content, ores usually have to be concentrated before treatment for recovery of the metal. This dressing of the ores is particularly important for mercury ores, as crushing normally produces large amounts of slime. The coarsely crushed ore is best treated by hand-picking at the mine, the rich mineral lumps being easily recognized by their red colour. The remaining ore is then classified into various sizes. High-grade mercury concentrates may be treated by volatilisation direct in retorts; but the coarse material is usually treated in shaft furnaces. Medium-coarse ore, pieces under 1½ ins., may also be so treated, as in the U.S.A.; but in Europe, shelf or tile furnaces are preferred. The fine material is sometimes treated in reverberatory furnaces in Europe, but with modern improvements in flotation practice the fines and slimes are very often concentrated by this method. Cinnabar is now quite easily floated in solutions containing aerofloat and copper sulphate.

The mercury sulphide is only partially decomposed by heating alone or with carbon, so the sulphur is locked up, either by forming some other more stable sulphide or by oxidising it to  $\text{SO}_2$  with air. The three chemical reactions available are the oxidation already mentioned, leaving mercury with the sulphur burned off; the formation of calcium sulphide and sulphate by heating with lime; or the formation of iron sulphide by heating with iron. Free mercury is liberated by each method.

All these reactions take place at temperatures above the boiling

point of mercury, and the mercury comes off as a vapour, which must subsequently be condensed to liquid metal by cooling. The first process, known as air reduction, is found to be the simplest in practice, although the presence of large amounts of gas, excess air, and dust results in the production of a considerable quantity of mercury dust or "stupp." This consists of fine globules of mercury so coated with dust that they will not coalesce. The product is therefore specially treated in modern plants by a mechanical extractor.

#### Types of Furnace

Processes are much the same all over the world, differences being chiefly in the design of furnaces and condensers. In modern practice there are two types, shaft furnace and reverberatory furnace. The latter, conventional in design, are used only for fine ore and for ores which decrepitate, *i.e.* burst into fine particles on heating. For coarse ores a straight shaft furnace is used, the most modern being a square vertical shaft of ordinary firebrick, with a bell arrangement for charging at the top and discharge plates for the spent ore at the bottom. The ore is mixed with 2-3 p.c. charcoal. This, with the sulphur in the ore itself, is sufficient fuel to raise the temperature to 800° C. For coarse, medium, and sometimes even fine ore, shaft furnaces with inclined shelves are everywhere replacing the older furnaces. Typical is one consisting of four rectangular shafts, fed from the same grate and each containing a series of tiles inclined at an angle of 45°. The ore slides down these tiles, being met by the hot gases from the grate, air for the fire being pre-heated by the hot spent ore. The ore must be dry or it sticks to the tiles. This drying is effected in rotary driers. Other variations are an intermediate between a reverberatory and a shaft furnace; the rotary kiln furnace; and furnaces with rotating rabbling-arms.

Very large condensing space is needed to collect all the mercury; for a furnace treating 50 tons of an ordinary ore 20,000 cu. ft. would be required. In America a series of large brickwork chambers is employed, while in Europe usually a number of stoneware tubes are used followed by chambers constructed of wood or glass (*see* Condenser). The fine dust may be removed by an electrostatic precipitator. A wet process is used in a few localities. Mercury is still used to some extent for the recovery of gold and silver from their

ores by amalgamation. It can be frozen into a solid, which can be hammered, rolled, or welded, like other metals. Forty p.c. of the world's production is used in the manufacture of drugs and chemicals, while the fulminate is used for making detonators. Large amounts are used by manufacturers of electrical apparatus, thermometers, barometers, and many other scientific instruments, and for floating the lanterns of lighthouses. Recently various solders containing mercury have been developed for joining galvanised iron, etc. Other users are the makers of vermilion, which is a mercuric sulphide, and of felt, caustic soda, and glacial acetic acid.

#### Compounds of Mercury

Two oxides of mercury are known, the black mercurous oxide,  $\text{Hg}_2\text{O}$ , and the red mercuric oxide,  $\text{HgO}$ , the latter being the substance used by Priestley in his original preparation of oxygen. The two chlorides are both white, but while one, mercurous chloride or calomel,  $\text{Hg}_2\text{Cl}_2$ , is much used in medicine, the other, mercuric chloride,  $\text{HgCl}_2$ , or corrosive sublimate, is extremely poisonous; it is used in surgery for disinfecting the skin. Mercurous iodide,  $\text{Hg}_2\text{I}_2$ , is greenish yellow, and mercuric iodide,  $\text{HgI}_2$ , is a brilliant scarlet, the latter being used in veterinary practice as a blistering agent. Various other compounds are used medically, *e.g.* mercuric salicylate for the treatment of "athlete's foot." In photography, mercuric iodide and perchloride may be used for intensification. Mercury in its metallic form was used to develop the image in the Daguerreotype process. *See* Calomel; Condensation; Corrosive Sublimate; Flotation; Fulminate of Mercury; Mersalyl; Metallurgy; Reverberatory Furnace; Wedge Roaster.

**Mercury Theatre.** London playhouse in Ladbroke Road, W.8. Opened by Ashley Dukes in 1933, it was launched on the strength of £10,000 which Dukes made by his play, *The Man with a Load of Mischief*. A parish hall and two adjoining houses were converted into a miniature theatre seating about 150. In 1935 T. S. Eliot's *Murder in the Cathedral* (*q.v.*) ran there for nine months. Experimental plays and revivals included *The Ascent of F6*, *The Playboy of the Western World*, and *Hedda Gabler*. Closed during the Second Great War, the Mercury was reopened in 1945 as a "poets' theatre," under the direction of Martin Browne, who put on *This Way to*



the Tomb, The Shadow Factory, Happy as Larry.

**Mercutio.** Character in Shakespeare's play *Romeo and Juliet* (q.v.). Kinsman to the prince of Verona, friend to Romeo, and a man of overflowing wit, fancy, and bawdy humour, he delivers the famous speech about the Fairy Queen Mab. He is killed in an encounter with Tybalt, Juliet's cousin, dies with a jest on his lips, and is avenged by Romeo, who slays Tybalt.

**Mercy.** In a Scriptural sense, an attribute of God. Much discussion has arisen regarding the translation of the word from the Hebrew. It is variously interpreted as compassion, yearning, pity, kindness, benignity, or loving-kindness, and is associated with truth. The believer is taught to pray for it, that Divine justice may be tempered by it, and is enjoined to show it to others. It has an affinity with grace. Generally speaking, the assumption seems to be that it may be extended where punishment cannot be withheld, but where wrong-doing is mitigated by the possession of a record not wholly blameworthy. The expression *Be merciful*, Deut. 21, v. 8, and 32, v. 43, in the A.V. is rendered in the R.V. by the words *Forgive and make expiation*. The common meaning of the word is eloquently expressed in Portia's speech in *The Merchant of Venice*, Act IV, scene 1. See *Charity*.

**Mercy, PREROGATIVE OF.** In English law, the right of the crown to grant a pardon to a person who has committed a criminal offence. See *Pardon*.

**Mercy, SISTERS OF.** Religious order of women who devote themselves to active work for the good of the community, especially among the poor and sick. It was founded in 1831 by Mary Catherine McAuley in Dublin. The sisters differ from nuns in not being enclosed within their convents, but going about in the exercise of their work.

All sisters of mercy take the threefold vow of poverty, chastity, and obedience; some annually, and others for life. In the Church of England the terms *Sisters*

of Mercy is used in a general sense; but in the Church of Rome it is usually restricted to the congregation founded by Mother McAuley, who seems to have taken the name from an order of Sisters of Mercy started at Barcelona about 1265. This congregation adapted the rule of S. Augustine and devoted itself to the instruction of poor girls, the visitation of the sick, and the protection of distressed women of good character. It now has about 112 houses in England and about 215 in Ireland, with some 877 convents in the U.S.A. The mother house is in Baggot Street, Dublin; but each convent is run independently. There are 22,000 sisters.

**Mer de Glace** (Fr., Sea of Ice). Famous Alpine glacier of France,

in the dept. of Haute-Savoie, near Chamonix. Over 9 m. long, it descends from the N. slope of Mont Blanc by three branches, the Talèfre, the Tacul (or Géant), and the Lechaux glaciers. It almost reaches the river Arve, having accumulated a large moraine. Below the Montanvert it is called the Glacier des Bois. It is noted for its beautiful scenery. See *Glacier*.

**Mere.** Name for a lake, e.g. Windermere, Buttermere, and Thirlmere, all in the English Lake District, and the meres of Cheshire. These last have been formed by the dissolving of salt by underground water, and the collapses on the removal of the brine by springs or pumps. The meres are formed in the depressions caused by the subsidences of the overlying soil.

## GEORGE MEREDITH: POET & NOVELIST

Sir John Hammerton, Author of *Meredith: His Life and Art*

See articles on Meredith's works, e.g. *Ordeal of Richard Feverel*, *Egoist*; and those on Hardy, Kipling, and others of his contemporaries. See also *English Language and Literature*; *Novel*

George Meredith was born Feb. 12, 1828, at 73, High Street, Portsmouth, of mixed Welsh and Irish parentage. His father was Augustus Armstrong Meredith, a naval outfitter, and his mother Jane, daughter of Michael Macnamara of the same town. He received his early schooling at Portsmouth, and at 14 was sent to the Moravian school at Neuwied on the Rhine, where he stayed for two years. Returning to London, he was articled to a city solicitor of literary tastes, but before he was 21 he had abandoned the law and turned to letters, his first and quite unpromising poem, *Chillianwallah*, appearing in *Chambers's Journal*, July 7, 1849.

On Aug. 9 Meredith married Mary Ellen Nicholls, nine years his senior, widow of a naval officer and daughter of Thomas Love Peacock. In 1851 he published *Poems*, the remarkable quality of which was recognized by Kingsley and by Tennyson, who went about declaiming the haunting stanzas of that masterpiece, *Love in the Valley*; in 1856 a fantastic and fascinating Oriental tale, *The Shaving of Shagpat*, was warmly welcomed by George Eliot and other competent critics; and in 1857 another, though less remarkable, fantastic tale, *Farina: a Legend of Cologne*, was inspired by his residence in Rhineland.

Of Meredith's activities between his marriage and the publication of *Shagpat* little or nothing is

known. He was not yet able to make a living by his pen, and a shadow was deepening on his home



*George Meredith*

But in 1856 he secured regular journalistic work as absentee editor of *The Ipswich Journal*, writing his leading articles and news paragraphs at his Weybridge home, and continued this connexion for some years, also contributing to *The Morning Post*, edited by his friend, Sir William Hardman. In 1858 Meredith and his wife separated, he and the only child of the marriage, Arthur, going to live at Copsham Cottage between Esher and Oxshott.

The Ordeal of Richard Feverel 1859, won the author new friends among those who could discern great work unguided, but far from gaining him a popular success, it was decried for its impropriety and even preached against from the pulpit: not then, as a generation later, a valuable form of advertisement. In 1861 Mrs. Meredith died, and after serial appearance in *Once a Week* there was published Evan Harrington, a masterly novel, in which the author gives a fictional study of members of that Portsmouth tailor's family whence he sprang, and exhibits certain aspects of English snobbery that make it a true mirror of its time. *Modern Love* and *Other Poems*, 1862, gave fulfilment of the rich promise of the earlier *Poems*; the title-poem, or sequence of caudated sonnets, i.e. with two or three extra lines, belongs to the best poetry of its age.

Meredith, who had now become literary adviser to the house of Chapman and Hall, a post he filled for some 30 years, married in 1864 Marie Vulliamy and found happiness. In the same year he published *Emilia* in England, later to be renamed *Sandra Belloni*. Rhoda Fleming, a tragic story and the most simply told of all his novels, followed in 1865. In 1866 he acted as correspondent in Italy for the *Morning Post* during the Austro-Italian War, and the next year published *Vittoria*, his fine sequel to *Sandra Belloni*, fresh with the local colour derived from his Italian sojourn. In 1868 he settled at Flint Cottage, Box Hill, Surrey, his home for the rest of his life. In 1871 came the vigorous and splendid romance *The Adventures of Harry Richmond*; in 1876 *Beauchamp's Career*; and in 1879 that masterpiece of character-study, *The Egoist*—a succession of great novels that consolidated their author's international fame, though they did not yet bring him that wide popularity which is based upon the mass of the novel-devouring public.

Meredith was now accepted by the real critics of literature as one of England's foremost men of letters in an age of great writers. *The Tragic Comedians*, 1880, was a fictional rendering of the story of Ferdinand Lassalle and Helene von Dönniges, the qualified success of which indicates a novelist somewhat ill at ease with history. After *Poems* and *Lyrics of the Joy of Earth*, 1883, including some of the finest of his nature poetry, there came *Diana of the Crossways*,

1885, the novel that caused a sudden widening of the public interest in Meredith's work, largely perhaps because of gossip about its being a romance with a key, and the association of its heroine with Caroline Norton.

In the year of this long-delayed recognition his happy married life ended, for Mrs. Meredith died Sept. 17. Later books were *Ballads and Poems of Tragic Life*, 1887; *A Reading of Earth*, 1888, poems which include the beautiful *A Faith on Trial*; *One of Our Conquerors*, 1891; *Lord Ormont* and his *Aminta*, 1894; and *The Amazing Marriage*, 1895, the last three of his novels, wherein the peculiarities of his style were somewhat accentuated. In 1905 Meredith received the Order of Merit. The 70th and 80th anniversaries of his birth were made occasions for cordial tributes of appreciation and homage. On May 18, 1909, he died at Box Hill, and after cremation his ashes were laid in the graveyard at Dorking. Meredith will assuredly remain articulate as one of England's greatest poetical interpreters of Nature, but his novels, both in style and construction, carry such defects of their qualities as may deny them the enduring classic fame their content deserves. He was by incidence of time one of the greatest Victorians, though intellectually his real kinship lay with the age of Fielding.

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**Meredith, OWEN.** Pseudonym of Edward Robert Bulwer Lytton, 1st earl of Lytton (*q.v.*).

**Meredith, WILLIAM.** Welsh footballer. An inside forward for Manchester City and Manchester United, he made 51 appearances for Wales in international matches. In 1895, his first year in international football, Meredith played in three such matches in eight days; he last represented Wales in 1920.

**Merejkowski, DMITRI SERGEIEVITCH** (1865-1941). Russian novelist, poet, and critic. Born at St. Petersburg, Aug. 2, 1865, he came into prominence with *The Causes of Decadence* in *Modern Russian Literature*, 1893, in which

he saw a remedy in the study of the French symbolists. His greatest work is the trilogy *Christ and Anti-Christ*, consisting of *The Death of the Gods*, or *Julian the Apostate*, 1901; *The Forerunner*, or *Leonardo da Vinci*, 1902; and *Peter and Alexis*, 1905. The whole has



been translated into English. Among his other works were plays about Paul I, 1908, and Alexander I, 1913; *Fourteenth of December*, 1920; *Napoleon*, 1928; *Jesus the Unknown*, 1932. He died in Dec., 1941. His wife wrote fiction and *belles lettres* under the name of Zinaida Hippis.

**Merneptah.** Egyptian king of the XIXth dynasty, c. 1225 B.C. The name is also spelled Merneptah and Mineptah. The 13th son and successor of Ramesses II, he was regarded by Alexandrian tradition as the Pharaoh of the Exodus. On a stela found at Thebes, in 1896, recording his Libyan victories in his fifth year, the words "Israel is desolate, its crops are not" contain the only known Egyptian record of that name. Some scholars regard Amenhotep II, and not Merneptah, as the Pharaoh of the Exodus. See Abydos.

**Meres, FRANCIS** (1565-1647) English divine, author, and translator. A graduate of Pembroke College, Cambridge, professor of rhetoric at Oxford, and later rector and schoolmaster at Wing, Rutland, he is chiefly remembered as the author of *Palladis Tamia: Wit's Treasury*, 1598, in which the literature of his period is compared with that of Greece and Rome, and the most important contemporary account is given of Shakespeare's works up to that year.

**Merganser** (Lat. *mergus*, diver; *anser*, goose). Genus of marine diving ducks, including about six



Merganser. Hooded species of marine duck

species distinguished by their extremely narrow beaks, furnished with saw-like teeth. Three species occur regularly in the British

islands. Of these the goosander (*M. merganser*) is the largest and has a glossy, green head and neck, black back, white wings, and ashy grey under-parts. It is common on the W. coast of Scotland and breeds in the Highlands, but visits England and Ireland only in severe weather. Although it spends most of its time at sea, it constructs its nest in hollow trees.

The red-breasted merganser (*M. serrator*) is a handsome bird, distinguished by the crested head and the pale chestnut colour of the lower neck and breast. It is a resident of the Highlands of Scotland and of the Orkneys, Shetlands, Hebrides, and Ireland, and in winter visits the coasts farther S. It is usually found in flocks, and feeds on small fishes, crustaceans, and molluscs. The smew (*M. albellus*) is a rare visitor; as is the hooded merganser (*M. cucullatus*) from N. America.

**Mergenthaler, OTTMAR** (1854-99). A German-born American inventor. Born in Württemberg, Nov. 10, 1854, he became a watchmaker, and in 1872 emigrated to the U.S.A. where he set up in Baltimore as a precision engineer. In 1886 he invented the first practical linotype machine, so revolutionising printing.

**Mergui.** Port and district of Burma, in Tenasserim division. The port is a minor harbour on the narrow coast strip of Tenasserim, with a trade in rice, pearls, and edible birds' nests. The existing town is modern, built on the site of an ancient city. The district contains tin. Rice, sugar-cane, sesamum, and tobacco are grown; tropical fruits are supplied to Rangoon and Moulmein. Pop. dist. 180,827; town, 25,000.

**Mergui Archipelago.** Group of hundreds of small islands off the Tenasserim coast, Burma. Most of the islets are rocky, composed of granite or sandstone. The native Selungs exchange edible birds' nests and bêche de mer for rice.

**Mérida** (anc. *Augusta Emerita*). Town of Spain, an important rly. junction in the prov. of Badajoz. It stands on the river Guadiana, 40 m. by rly E. of Badajoz. It was the capital of Lusitania and has more Roman remains than any other Spanish city, including a fine stone bridge of 60 arches, 2,670 ft. long, built in the time of Augustus or Trajan; the ruins of a three tier aqueduct 85 ft. high; crumbling walls and gates; a triumphal arch, a theatre, an amphitheatre, temples, etc. Pop. 14,633.

Founded in 25 B.C., Mérida became a city of great splendour. It fell into the hands of the Moors A.D. 712. Its archbishopric, dating from Visigothic times, was transferred in 1129 to Santiago, to whose knights it was entrusted on its capture from the Moors in 1228.

**Mérida.** City of Mexico. The capital of the state of Yucatan, it is a well-built city, with wide streets and many open spaces, and is connected by rly. with Progreso 24 m. to the N. on the Gulf of Mexico, and by air with the capital and the U.S.A. The seat of a university, with law, medicine, and other faculties, it has a cathedral dating from 1598, a 16th century Franciscan convent, the bishop's palace, a government palace, and a museum. Cotton, straw hats, cigars, leather, and soap are among the manufactures, and Mérida is the centre of the henequen or sisal industry. The city dates from 1542 and the bishopric from 1561. Pop. 98,636.

**Mérida.** City and state of Venezuela. The city stands on the Chama, 310 m. S.W. of Caracas. It has a cathedral, seat of an archbishop, and university. It was founded by the Spaniards in 1558, partly destroyed by earthquakes in 1812 and in 1894, and rapidly recovered.

Mérida state has an area of 4,400 sq. m., and is occupied largely by the branch of the E. Andes called the Cordillera de Mérida. It was created a state in 1901. Cocoa is cultivated. Pop. 192,994

**Meriden.** Village of Warwickshire, England. It is  $5\frac{1}{2}$  m. W.N.W. of Coventry and is regarded as the centre of England. There are

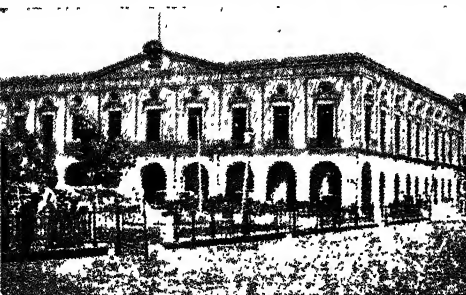


Meriden, Warwickshire. The cross which was believed to mark the centre of England

remains of a cross erected to mark what was believed to be the exact spot. An obelisk of Cornish granite is a memorial to cyclists who fell in the First Great War. The cost of its erection was subscribed for by nearly 30,000 cyclists from all over Great Britain.

**Meriden.** City of Connecticut, U.S.A., in New Haven co. Situated almost equidistant from Hartford and New Haven, it is served by the New York, New Haven, and Hartford Rly. It contains the Curtis Memorial Library, and among its institutions is the Connecticut School for Boys. The International Silver co. here is widely known as a manufacturer of silver ware. Other metal products are also made. Near by is Hubbard Park, a natural reservation of 900 acres, in which the Hanging Hills, 1,000 ft. high, are said to have inspired Gerhart Hauptmann's *The Sunken Bell*. Formerly part of Wallingford, Meriden was incorporated in 1806, and became a city in 1867. Pop. 39,494.

**Meridian** (Lat. *meridies*, mid-day). In astronomy, the great circle of the heavens passing through zenith of any place and the N. and S. poles of the celestial sphere. A terrestrial meridian is the line of intersection of the earth's surface with a plane passing through the poles. The magnetic meridian at any place on the earth's surface is the direction along which a horizontally suspended compass



Mérida, Mexico. The Governor's palace

needle points when influenced only by the earth's magnetism. See Longitude: Transit Circle.

**Meridian.** City of Mississippi, U.S.A., the co. seat of Lauderdale co. Situated 95 m. E. of Jackson, and served by the Alabama Great Southern and other rlys., it has several educational institutions, and the East Mississippi Hospital for the Insane. The most important manufacturing city in the state, its lumber mills cut 35,000 ft. of hardwood daily, and its stockyards are able to accommodate 5,000 head of cattle. Founded in 1854, Meridian became a city in 1860. Four years later it was occupied by a Federal force, which demolished the rly. tracks and most of the buildings. In 1906 great damage was done by a tornado. Pop. 35,481.

**Merim.** Variant spelling of Mirim (q.v.), the name of a lake in S. America.

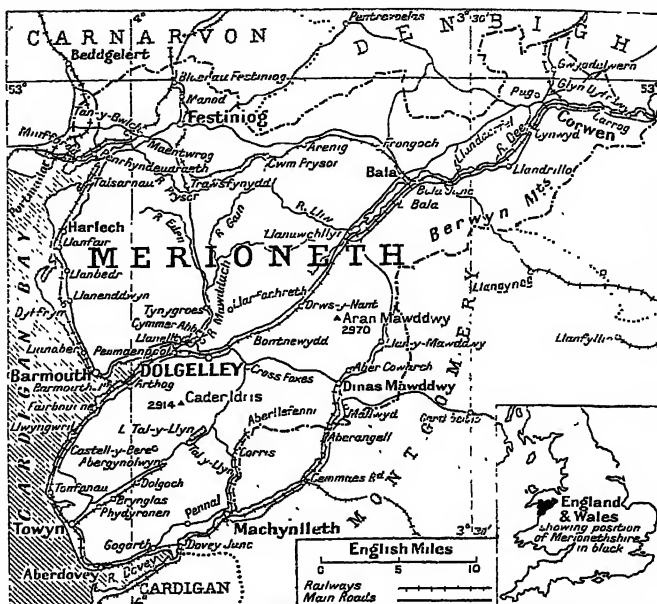
**Mérimeé, PROSPER (1803-70).** French author. Born in Paris, Sept. 28, 1803, he was educated for the bar but entered the civil service, and became a senator in 1853. He began his literary career with two clever mystifications, *Le*



*Pro Mérimée*  
(Prosper Mérimée)

Théâtre de Clara Gazul, 1825; and *Guzla*, 1827, which he published as translations respectively of the plays of a Spanish actress and some Illyrian folk-songs. These he followed with an historical novel, *Chronique du Règne de Charles IX.* He is at his best, however, in his shorter tales, some of which are masterpieces. By far the best known of these is *Carmen*, on which Bizet based his opera. He also did some excellent work in history, e.g. *Les Faux Démétrius*, 1852. His *Lettres à Une Inconnue* throw an interesting light upon his enigmatical character. A man of a melancholy, sceptical, and sensitive temper, and endowed with a powerful intellect, he was a subtle and scholarly writer, and one of the greatest masters of imaginative prose in the 19th century. Consult Prosper Mérimée: a Mask and a Face, G. H. Johnstone, 1927.

**Meringue.** Confection of whites of eggs whipped to a froth and powdered sugar in the proportion of ten or twelve eggs to 1 lb. of sugar, and baked till fawn in colour. The result is a light, brittle sub-



Merionethshire. Map of this maritime county of North Wales

stance which may be served with whipped cream. Meringue is often used as a garnish for puddings and pastry. The name is explained as a variant of Marengo, in honour of which victory the confection was invented by Napoleon's cook.

**Merino.** Originally the Spanish name for a breed of sheep with exceptionally fine white wool. It has been bred in many parts of the world. In the textile trade the term now has various meanings: (1) the finest wools, whether from sheep as above or from more modern inter-breedings which have wool of a similar quality; (2) Merino yarn, used for shirtings and hosiery, containing fine wool and cotton in various proportions, commonly 50 p.c. of each; (3) a dress fabric containing merino wool, and woven in a twill weave.

**Merionethshire.** County of N. Wales. Its name is derived from Meirion, a grandson of prince Cunedda (5th century). Its area is 660 sq. m., and it has a coast-line of 38 m. on Cardigan Bay. The county presents a variety of picturesque scenery, with rugged mountains, beautiful valleys, and waterfalls. The highest summits are Aran Mawddwy and Cader Idris, and there are a number of others over 2,000 ft. in height.



Merionethshire arms

The county has many lakes, the largest being Bala and Tal-y-llyn; principal rivers the Dee, Mawddach, and Dovey. The soil is of an inferior quality except in the valleys, and agriculture is backward; sheep and ponies are reared. Slate, limestone, and manganese are quarried, and woollens are manufactured. The county has rly. connexions with London. It returns one member to parliament. Dolgelly is the county town; other towns are Festiniog, Barmouth, Towyn, Corwen, and Bala. Harlech is herein, and another ruined castle is Castell y Bere. Cymmer Abbey is the ruin of an old Cistercian foundation. Corwen was the headquarters from which Owen Glendower attacked Shrewsbury. Pop. 43,201.

**Meristems.** Botanical term. It is applied to tissues of plants in which growth and multiplication of cells is pronounced, in contrast to permanent tissues the elements of which have ceased to grow and are generally no longer capable of division. Promeristems consist of thin walled cells, often hexagonal prisms in shape. They have large nuclei and abundant cytoplasm in which there are usually many small vacuoles. They are especially readily seen in sections of root tips or of the apical cone from within a bud. By their repeated division, mainly in a direction across the organ in which they are found, they add cells to its length. They also initiate by their outgrowth the

origin of leaves and buds from the stem apex and arise in the pericycle of roots to form new root apices for lateral root branches. The youngest promeristem cells are usually nearest the apical cone. Other older meristem cells further away from this show fewer and larger vacuoles and with distance approximate in shape to the permanent tissue elements into which they are destined to change. These considerably vacuolated but not yet mature cells are histogen cells, and together with the promeristems constitute the apical meristems by virtue of their position and are primary meristems since upon their activity the primary development of the plant body is due. Sometimes a small proportion of apical meristem cells retain their meristematic capacity for growth and division after their neighbours have become converted into permanent tissue. There may be left transverse plates of intercalary meristem, e.g. at the bottoms of iris leaves and below the nodes of some mints, or longitudinal strips of primary cambium such as are common in the vascular bundles of dicotyledon stems. Other cambia are secondary since they are not derived directly from apical meristem.

**Merit, ORDER OF.** British order for distinguished service in all callings. It was founded by



Edward VII, June 26, 1902. Its members are divided into two classes, civil and military, and are distinguished by the letters O. M. The badge is a cross pattée formée of red and blue, having

on a blue medallion, surrounded by a laurel wreath, the words *For Merit*, and on the reverse the royal cypher. Crossed swords are added for naval and military members. Appointment to the order is made personally by the sovereign, who can bestow it without ministerial advice. It is limited to 24 members. Membership is normally conferred on subjects of the crown for exceptional services to the British Commonwealth, or to art, literature, or science. Although designed as a special distinction, it confers no precedence and carries no title. Members in 1948 were Sir Charles Sherrington, G. M.

Trevelyan, John Masefield, Ralph Vaughan Williams, Lord Chetwode, Lord Chatfield, Lord Newall, Gilbert Murray, Augustus John, Sir Henry Dale, Sir Giles Scott, Winston Churchill, Lord Portal, Lord Alanbrooke, Lord Cunningham, Lord Halifax, J. C. Smuts, W. L. Mackenzie King, and T. S. Eliot, with Dwight D. Eisenhower as an honorary member. Florence Nightingale was the only woman to receive the honour.

**Merit, ORDER OF.** Decoration awarded in various countries for distinguished service in various callings. The Indian Order of Merit was instituted in 1837 for native officers and soldiers; the ribbon is blue with red edges. The Prussian, later German, order *Pour le Mérite* for military merit was instituted in 1740; the badge was a Maltese cross, having on the upper arm the letter "F," on the others the words "Pour le Mérite"; the higher grade had a wreath of oak leaves added; the ribbon was black with white stripes.

The Order of Merit in Arts and Sciences was instituted by Frederick William IV of Prussia in honour of Frederick II; the badge was a golden Prussian eagle on a white medallion, and the ribbon was white edged with black. The Russian order, instituted in 1792, was remodelled in 1807; the badge was a black cross pattée concave, and the ribbon was dark blue with black stripes. The Spanish military Order of Merit was instituted in 1864. The Order of Merit at Sea, founded in 1866, has the same badge, while the ribbon is blue with white border. There are also the Alphonso XII Order of Merit for Science, Literature, and Art, and the Alphonso XII Civil Order of Merit, both founded by Alphonso XIII in 1902. The Savoy military Order of Merit was founded in 1815, and revised by Victor Emanuel in 1855; Italy also has the civil Order of Merit of Savoy, founded in 1831.

**Meritorious Service Medal.** British decoration awarded to men of the army, navy, and air force. The first award for gallantry for other ranks, it was instituted for army sergeants in 1845 and for marines in 1849. It had the head of Queen Victoria on the obverse, and a laurel wreath, within which was the inscription "For Meritorious Service," on the reverse. The ribbon was deep red for the army and deep blue for the navy. It fell into abeyance about the time of the Crimean War, and was revived

in 1884, when it was extended to all soldiers above the rank of corporal. In 1916 it was thrown

open to the lower ranks of the army, navy, and R.A.F. The present ribbon for the army is crimson with a narrow edging and narrow central stripe of white; for the navy, crimson with three white stripes; and for the R.A.F., a ribbon with narrow white edges, a white central stripe, a band of deep blue between the left edge and the centre, and a crimson band between the centre and right edge.

**Merivale, CHARLES (1808-93).** British historian. Born March 8, 1808, he was educated at Harrow, Haileybury, and St. John's, Cambridge, where he had a distinguished academic career, and was a noted athlete, rowing in the first university boat race in 1829. He became dean of Ely in 1869.

His *History of the Romans under the Empire, 1850-1862*, is his greatest work. The *Fall of the Roman Republic, 1853*, is a popular epitome of a section of it, and *The General History of Rome from the beginning to the fall of the Western Empire, 1875*, is a summary. He died Dec. 27, 1893.

**Merlin.** Type of aero-engine designed by Rolls-Royce, Ltd. It was used extensively in the Second Great War and was in the liquid-cooled 12-cylinder Vee class. The power was progressively increased from the 1,030 h.p. of the Mark I in 1939 to the 2,080 h.p. of the Series 140 (1946). Aircraft, both fighting and civil, fitted with the Merlin included the Hurricane, Spitfire, and Mustang (single-engined), Mosquito (twin-engined), and Halifax, Lancaster, York, and Tudor (four-engined). See *Aero-Engines*, illus., p. 119.

**Merlin** (*Falco columbarius*). Smallest of the British falcons. It is greyish blue on the upper parts, the male being pale yellow spotted with brown on the under parts; and the female brownish above and yellowish white beneath. It is about 11 ins. long, and weighs only about 6 oz. Ranging from Yorkshire to the Shetlands, and found in the wilder parts of Ireland, the merlin lives among the mountains and moors, and nests on the ground among



Meritorious Service Medal (army)





Merlin, British falcon

the heather, but occasionally takes possession of a deserted nest in a tree. It preys upon small birds.

**Merlin** (Welsh, Myrddin). Legendary wizard and prophet, celebrated in Welsh, Breton, and Scottish tradition. Of demon origin, he lived, it was said, in the 5th and 6th centuries at the courts of Vortigern and Arthur. Geoffrey of Monmouth wrote his life, and related his deeds in his *History of the Britons*. The Prophecies of Merlin, dealing with the fortunes of Britain, were popular from the time of Geoffrey to the 17th cent., and his adventures were described in romances by English writers, including Malory.

**Mermaid.** Fabulous creature of the sea or of lakes, with the head, arms, and upper part of the body like a woman, and the lower like a fish. With certain variations the mermaid is found in legendary lore of many nations. Among sailors she is often imagined as sitting on a rock, combing her hair and singing, her appearance being supposed to portend a storm. The corresponding male is called the merman.

The mermaid's wineglass is the name given to an exquisite green seaweed, found in tropical seas. Two other tropical seaweeds are known as the mermaid's fan and the merman's shaving brush. See Manatee; Nixie; Siren.

**Mermaid Tavern.** Tavern formerly in Cheapside, with side entrances in Friday Street and Bread Street, destroyed in the Great Fire, 1666. In this tavern, which dated from before 1529, Sir Walter Raleigh, according to Gifford in his edition of Ben Jonson's works, instituted The Mermaid Club, famous as the supposed meeting-place, about

1603 and onwards, of Shakespeare, Jonson, Beaumont, Fletcher, Carew, and other wits. But there is no contemporary evidence of its existence.

**Merodach-Baladan.** Name of three kings of Babylon, two being comparatively unimportant. The second was a Chaldean chief who, while Sargon II was preoccupied with Samaria, captured Babylon, and reigned 721-710 B.C. Being overthrown he retired to the Sealand; reappearing in 703, he was defeated by Sennacherib.



Merodach-Baladan II, the Hebrew form of Marduk-aplu-iddin, king of Babylon, investing a vassal with land

**Meroë.** Ancient Nubian city at Bagarawiya, near the right Nile bank 28 m. N.E. of Shendi, below Khartum. It gives its name to the so-called island bounded by the Blue Nile and the Atbara. Occupied before history by Neolithic Hamites of the same culture as their northern neighbours, this region lagged behind the advances in civilization made by the metal-working dynastic Egyptians. Hence the Ethiopian stock and culture were strongly affected by negro contact, against which Meroë was for centuries the most southerly outposts. Excavating for the Liverpool institute of archaeology from 1910, Garstang showed that the city was founded on an earlier site after 650 B.C. by Aspelut from Napata. During this "early" period a sun-temple and a temple of Amon were erected, and Egyptian culture was dominant.

After long decadence a "middle" period was inaugurated by Ergamenes about 300 B.C. This was characterised by Hellenistic influence such as royal baths, frescoed

chambers, cremation, and by a non-Egyptian native art, notably a decorated biscuit-ware of exquisite fineness. About 150 B.C. the Ethiopian queens began to be called Candace, and it was during this age that about 200 small steep-angled pyramids were built over burned or unummified remains.

A brief Roman occupation was represented by a bronze head of Roman workmanship, thought to be of Augustus, now in the British Museum. Hereupon followed, 10 B.C., a "late" period of artistic decline, lasting until A.D. 700, when Ethiopia was dominated by the Christian kingdom of Dongola, which endured for four centuries after Coptic Egypt adopted Islam.

**Merom, WATERS OF.** Ancient name for Lake Huleh, an expansion of the Jordan farther N. than the Sea of Galilee. It measures rather more than 4 m. by 3 m. A battle between Joshua and the Canaanites took place near by.

**Merostoma** (Gr. *meros*, part; *stoma*, mouth). Class of arthropoda between Trilobita and Arachnida. The king crab is the only surviving example. A fossil form found in rocks of the Cambrian and Permian age was shaped rather like a scorpion, and the number of remains proves that in the Silurian they were exceedingly numerous. See King Crab.

**Merovingians.** Name given to the family that ruled over France c. 500-c. 750. It is derived from a Frank named Merovech, a king of the Salian Franks. His descendant Clovis was the real founder of the Frankish kingdom, and a succession of Merovingians ruled over Austrasia, Neustria, and the other small Frankish kingdoms. As the last Merovingian kings were feeble rulers, their authority passed to the mayors of the palace. In 751 Pepin, with the consent of pope and people,



Meroë, Nubia. Hall of Columns in the ruined temple of Amon



deposed Childeric III and shut him up in a monastery. He was the last of the Merovingian kings, who were replaced by the Carolingians. See France: History; Franks.

**Merriam, JOHN CAMPBELL** (1869-1945). American palaeontologist. Born at Hopkinton, Iowa, Oct. 20, 1869, he was educated at the university of California and at Munich. He taught palaeontology at his own university, 1894-1920, and thereafter was president of the Carnegie institution at Washington until 38. He died Oct. 30, 1945. His published works include *Cave Exploration*, 1906; *Earth Sciences as the Background of History*, 1920; *The Living Past*, 1930; *Application of Science in Human Affairs*, 1938.

**Merrick.** Mountain in Kircudbrightshire, Scotland, 20 m. N. of Wigtown. Alt. 2,764 ft.

**Merrick, LEONARD** (1864-1939). British novelist. His family name was Miller, which



Leonard Merrick,  
British novelist  
Russell

he changed by deed poll. Born at Hampstead, Feb. 21, 1864, he was educated at Brighton College. In writing, his delicate irony and airy dialogue endeared him to fellow writers, and he was hailed by Barrie as "the novelist's novelist." Many of his stories had Parisian settings and were concerned with literary and theatrical characters. Best known are *The Actor-Manager*, 1898; *Conrad in Quest of his Youth*, 1903; *The House of Lynch*, 1907; *A Chair on the Boulevard*, 1908; *The Position of Peggy Harper*, 1911; *While Paris Laughed*, 1918. A collected edition of his works was issued in 1918, each novel having an introductory appreciation by a distinguished writer. Merrick wrote for the stage, *My Innocent Boy* (with G. R. Sims), 1898; *The Elixir of Youth*; *When the Lamps are Lighted*. He died Aug. 7, 1939.

**Merrie England.** Light opera by Basil Hood with music by Edward German. Notable for its sprightly and melodious music, it introduces Queen Elizabeth, Essex, Raleigh, and Burleigh among Tudor characters. Its most popular ballads include *O Peaceful England* and *The Yeomen of England*. Produced at the Savoy, London, April 2, 1902, it proved

one of the most successful light operas of its time. It has been several times revived, and is frequently performed by amateur companies. A concert version is sometimes performed.

The title was used for a book by Robert Blatchford which, in the form of letters explaining socialism to an imaginary working man, first appeared as a series of articles in *The Clarion*, a weekly founded and edited by Blatchford. These articles were collected and appeared in book form in 1894.

**Merrilies, MEG.** Character in Scott's novel *Guy Mannering*. "A kind o' queen among the gipsies," she was described by Jeffrey as "most akin to the witches of Macbeth, with some traits of the ancient sibyl ingrafted on the coarser stock of a gipsy of the eighteenth century." Her prototype was Jean Gordon, who was ducked to death at Carlisle for being a Jacobite.

**Merrill, STUART** (1863-1916). French-American poet. He was born in Long Island, New York, taken in early infancy to France and educated in Paris, and after a four years' course in law at Columbia university made his home in France. One of the noted writers of French lyric poetry of his time, he was described by a French critic as being in the line of great tradition from Ronsard and Verlaine. His poems, all published in Paris, included *Petites Poèmes d'Automne*, 1895; *Poèmes*, 1897; *Les Quatres Saisons*, 1900; *Une Voix dans la Foule*, *Poèmes*, 1909. His only volume in English was *From the French: Pastels in Prose*, 1890. He died Jan. 31, 1916.

**Merrimac.** American ironclad. Originally launched by the U.S. navy as a frigate, she was sunk by the Federal government, in the Norfolk Yards, on the outbreak of the Civil War, 1861. Refloated by the Confederates, she was renamed the *Virginia*. On March 9, 1862, she encountered the Federal ironclad *Monitor* in Hampton Roads, and after a sharp fight lasting four hours the *Merrimac* was finally silenced and driven off. She was sunk on the evacuation of Norfolk Yards, May 11, 1862.

**Merrimac** OR **MERRIMACK.** River of U.S.A. Rising in the White Mts. in New Hampshire, it flows S. for about 60 m. into Massachusetts, and thence E. for a further 40 m. to the Atlantic Ocean, which it enters near Newburyport. With its longest headstream it has a length of 180 m. and is navigable to Haverhill. Its

swift fall provides waterpower for many cities, especially Lowell, long a great textile centre.

**Merriman, HENRY SETON** (1862-1903). Pseudonym of Hugh Stowell Scott, British novelist. Born at Newcastle-on-Tyne, May 9, 1862, and educated at Loretto, he entered an underwriter's office in London. His first novel, *Young Mistley*, appeared in 1888, and the reception of *The Slave of the Lamp* and *From One Generation to Another*, 1892, induced him to leave the city. Thereafter followed in rapid succession *With Edged Tools*, *The Sowers*, *In Kedar's Tents*, *Roden's Corner*, *The Isle of Unrest*, *Barlasch of the Guard*, and several others. Though his characters tend to type, Seton Merriman had the story-telling gift to a high degree. His novels, which are for the most part of the romantic, historical type, early secure the reader's interest and hold it to the last. He died Nov. 19, 1903.

**Merrivale, HENRY EDWARD DUKE, BARON** (1855-1939). British judge. Son of a granite merchant, he was born in Devon, and as a young man became parliamentary reporter. Called to the bar in 1885, he joined the Western Circuit, and was recorder of Devonport and Plymouth, 1897-1900. He then entered politics, and was Unionist M.P. for Plymouth, 1900-06, and Exeter, 1910-18. Chief secretary for Ireland, 1916-18, he became lord justice of appeal in the latter year, and was president of the Probate, Divorce, and Admiralty div., 1919-33. Raised to the peerage 1925, he died May 20, 1939.

**Merry Andrew.** Term generally applied to a buffoon at a fair or other public gathering, or to anyone behaving like a buffoon. The name has been traced to a 16th century traveller and doctor, Andrew Boorde, who used to address crowds at fairs and other places in a ludicrous manner, but it is probable that the term a Merry Andrew is of earlier date.

**Merry Widow, THE.** Viennese light opera. Written by Franz Lehar, it was adapted for the English stage by Basil Hood, and produced at Daly's Theatre, London, June 8, 1907, running for 778 performances. Lily Elsie, Joseph Coyne, and George Graves took the



Lord Merrivale,  
British judge

leading parts. Its tuneful melodies, especially the waltz and Vilja, made it one of the most popular pieces of its kind, and it was many times revived. Adolf Hitler was reported to have an inordinate liking for the music.

**Merry Wives of Windsor.** THE. Farcical comedy by Shakespeare. Ford, a gentleman of Windsor, is seized with a groundless jealousy of his wife, Mistress Ford, of which she and her friend, Mistress Page, take advantage to bring discomfiture on Sir John Falstaff, who makes love to them both on account of the money he thinks he can obtain from them. The characters include Justice Shallow, Sir Hugh Evans, the Welsh parson, the Host of the Garter Inn, the foolish Slender, and "sweet" Anne Page, and Falstaff's followers, Bardolph, Pistol, and Nym. The Falstaff of this play is less attractive in his roguery than is the Falstaff of the historical plays: less of a wit, more of a fool. The scenes are laid at Windsor.

According to a tradition made current by Rowe in 1709, this play was written about 1598, because Queen Elizabeth, after seeing King Henry the Fourth (*q.v.*), wished to see Falstaff in love. The earliest extant edition is the quarto of 1602. As given in the 1623 folio, the play is almost twice as long as in the quarto. Critical opinion favours the theory of a lost original. Of the 3,018 lines in the usual editions, 2,703 are in prose.

Sources of the plot include the story of Lucius and Camillus in *Il Pecorone* of Ser Giovanni Fiorentino (1, 2), and two tales in *Le tredici Piacevoli Notti* of Straparola, of one of which an English version appeared in Tarleton's *Newses out of Purgatorie*; and *The Fishwife's Tale* of Brainford, in *Kinde Kit* of Kingston's *Westward for Smelts*. The bombast of Marlowe and Peele and Jonson's "humours" are believed to be satirised; and discussion has arisen over the supposed allusion to Sir Thomas Lucy in i, 1. The presentation of the buoyant domestic life of an Elizabethan country town bears distinctive marks of Shakespeare's own experience.

**Mersalyl.** Drug made by the action of mercurial acetate and methyl alcohol on salicylallylamide O-acetic acid and subsequent conversion to the sodium salt. It is used as a diuretic to get rid of excess fluid where a patient is suffering from liver trouble or heart failure, or from obesity due to poor elimination of fluid.

**Mersa Matruh.** Coast town of Egypt. It is 100 m. W. of Alexandria and was a strongpoint in the defence of Egypt during the North African campaigns of the Second Great War. Gen. Wavell concentrated large forces at this strategic centre against Graziani's army in the summer of 1940. When the Italians invaded Egypt on September 13, 1940, it was from Mersa Matruh that the Imperial forces launched their attack against Sidi Barrani on December 11. There were raids by Axis aircraft in June, 1942; Mersa Matruh was evacuated by the British forces on June 29, and the town was occupied by Rommel's troops. Armoured units of the 8th Army recaptured Mersa Matruh with little opposition, Nov. 8, during the advance that drove the Germans and Italians out of Libya.

**Mersea.** Island of Essex. It lies between the estuaries of the Colne and Blackwater, 8 m. S.E. of Colchester. It is nearly 5 m. long and 2 m. wide, and is connected with the mainland by a causeway. It was the scene of Baring Gould's *Mehalah*. West Mersea is a popular pleasure resort. Pop. 2,067.

**Merseburg.** Town of E. Germany, in the *Land* of Saxony-Anhalt. It is on the Salle, 16 m. W. of Leipzig. The cathedral dates from the 11th to the 16th century. The fine castle was originally built in 1480, and reconstructed in the 17th century. The bishopric was abolished in 1561, and its lands were assigned in 1648 to the elector of Saxony. There was in existence a small duchy of Saxe-Merseburg, 1656-1738, the duchy then reverting to Saxony, but in 1815 most of it was given to Prussia. During the First Great War many prisoners of war were interned here; during the Second Great War it was captured by units of the U.S. 1st army, April 15, 1945, suffering considerable damage especially in the harbour region. After Germany's surrender it lay within the Russian zone of occupation.

**Mersey.** English river. Formed by the union of the Goyt and the Etherow, in Derbyshire, and flowing generally W. between Lancashire and Cheshire, it enters the Irish Sea by an estuary 16 m. in length. From the right it receives the Tame, at Stockport, and the Irwell, and on the left its chief



Mersey. Map of the estuary or Liverpool channel which separates the counties of Cheshire and Lancashire

tributaries are the Bollin and the Weaver. Warrington lies on the right bank, and important towns along the estuary are Runcorn, Liverpool, Birkenhead, and Wallasey. At Eastham, on the estuary, is the entrance to the Manchester Ship Canal, and beneath the bed of the river, extending from Birkenhead to Liverpool, is the Mersey Railway Tunnel, opened in 1886, and a road tunnel, known as the Mersey Tunnel (*q.v.*), opened in 1934. The estuary, which varies in breadth from 1 m. to 3 m., is partly obstructed by sandbanks. Powerful dredgers are necessary to keep open the channel for the use of the largest liners. The total length is 70 m., including the estuary.

**Mersey, JOHN CHARLES BIGHAM, 1ST VISCOUNT (1840-1929).** British lawyer. Born Aug. 3, 1840, the son of a Liverpool merchant, he was educated at Liverpool and abroad. Called to the bar in 1870, he became a Q.C. in 1883, and in 1897 was made a judge of the high court. He became president of the probate, divorce, and admiralty division in 1909, but retired in 1910 with a barony, and in 1916 was raised to the rank of viscount. He was the commissioner appointed to inquire into the Titanic disaster in 1912, and into the loss of the Lusitania and Falaba in 1915. He died Sept. 3, 1929, and was succeeded by his son, Charles Clive Bigham (b. Aug. 18, 1872). The 2nd viscount was educated at Eton and Sandhurst, and commissioned in the Grenadier Guards. He became deputy chairman of committees of the house of lords in 1933, and chief Liberal whip there 1944-49.



1st Viscount Mersey,  
British lawyer  
Russell

deputy chairman of committees of the house of lords in 1933, and chief Liberal whip there 1944-49.

**Mersey Docks and Harbour Board.** Body set up in 1857 to control the docks and harbours of the Mersey. It took over those existing at Liverpool and Birkenhead, and has since greatly improved them on both sides of the river. In 1928 an extension was opened. The board consists of 28 members, four nominated, and the others chosen by those who use the ports. It maintains light-houses, lightships, and other aids to navigation, and has an annual revenue of about £5,500,000. The offices overlook St. George's landing stage. *See* Liverpool.

**Merseyside.** Dock areas of Liverpool and Birkenhead on both banks of the Mersey. Controlled by the Mersey Docks and Harbour Board, the docks at Liverpool have nearly 40 m. of quays, and those at Birkenhead about 10. Many attacks were made on Merseyside by German aircraft during the Second Great War, heavy damage being inflicted on five consecutive nights early in May, 1941. Acres of warehouses between Liverpool and Bootle were destroyed, and the pierhead area was devastated.

**Mersey Tunnel.** Tunnel for vehicular traffic under the Mersey. Begun in 1925 and opened in 1934,

it affords rapid communication between Liverpool and Birkenhead and links Lancashire with the Wirral peninsula. The main portion takes four lines of traffic abreast, and the total length is 2½ miles. Important features are the ventilation and lighting arrangements and a system of fire stations, placed at intervals of about 50 yds., with automatic fire alarms to stop the traffic. Its normal capacity is 4,150 vehicles per hour, and in 1947 over 4,000,000 people passed through it. At its deepest point it is 170 ft. below high-water level. The cost of the project was over £7,000,000.

**Mersina OR MERSIN.** Port of Asiatic Turkey. It is on the Mediterranean, in the vilayet of Icel, and is connected by rail with Tarsus and Adana. It exports timber, wool, cotton, and fruit. Population 30,000.

**Merthyr Tydfil.** Co. and mun. bor. and market town of Glamorganshire, Wales. It stands on the Taff, 24 m. N.N.W. of Cardiff and 184 m. from London, and is served by rlys. There is a service of municipal buses. The old parish church has been rebuilt, and there are many other ecclesiastical buildings, all modern; recent also are the town hall, drill hall, free library and general hospital.



Merthyr Tydfil

The grounds of Cyfarthfa Castle are public property, and the castle itself has been converted into a secondary school. Merthyr stands on the S. Wales coalfield, and has up-to-date factories besides its mines. The borough includes Dowlais, Cyfarthfa, Pen-y-darren, and Plymouth.

The village of Merthyr owed its name to a female saint, S. Tydfil, martyred in the 5th century. In 1759 ironworks were opened at Dowlais, and soon afterwards at Cyfarthfa, Plymouth, and elsewhere. As separate industrial villages these places expanded during the 19th century, and in 1905 they were united together in a bor-



Mersey Tunnel. A junction near the Liverpool end. The road to the left leads to the docks; the right to Kingsway, Liverpool, entrance. The tunnel was opened by King George V, 1934

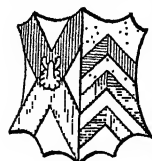
ough. In 1908 Merthyr was made a co. bor. It has been represented in the house of commons since 1832; in 1948 it was made a borough constituency. Market day, Sat. Pop. est. 60,360.

**Merton, WALTER DE (d. 1277).** English prelate. His family was connected with Basingstoke. He was ordained 1235. Sent by Edward I on a mission to Rome, he was in 1261 made chancellor, and in 1274 bishop of Rochester. His chief fame is due to his foundation of Merton College (*q.v.*).

**Merton and Morden.** Urban dist. of Surrey, England. Formed 1911 from two parishes, it is a bor. constituency. It is well served by London Transport, Morden being the southern terminus of the Northern line (underground rly.). There are also rly. stations of the Southern region. The district, now mainly residential, has a long history. Cynewulf, king of Wessex, was murdered here in 784. An Augustinian priory was founded in 1115, near the river Wandle; it was dissolved in 1538. The great coun-

cil of the nation was held at Merton Priory in 1236, when the famous statutes of Merton were passed in reply to the attempt of the king and prelates to force upon the people the rule of canon law for the legitimization of children born before the wedlock of their parents. Crown property during 1538-1610, the priory in 1724 became the centre of a calico-printing factory. Material from the building was used in the construction of Merton Abbey. Merton Place, now no more, was the residence of Nelson and Sir William and Lady Hamilton. The Merton parish church of S. Mary, frequently restored, dates from 1120, and contains notable monuments. The Morden parish church of S. Lawrence was rebuilt in the Gothic style in 1636. A great L.C.C. housing estate, St. Helier, covering 850 acres, was developed here from 1927. Industries include engineering and toy and bank note making. Pop. 77,523.

**Merton College.** One of the colleges of the university of Oxford. It was founded in 1264 by Walter de Merton (q.v.) at Malden, Surrey, not being removed to Oxford until 1274. The buildings in Merton Street are among the oldest in Oxford. The large chapel, once a parish church,



Merton College arms

contains some beautiful work. The library of the 14th century is notable, and the small treasury is the oldest part of the college. Merton includes S. Alban Hall, incorporated with it in 1882, the buildings of which are also very old. There is a small but beautiful garden, enclosed by the city wall, and some new buildings. The college still retains property at Merton, Surrey. Its head is the warden, and its scholars are known as post-masters. Up at Merton were Steele, Lord Halsbury, Bishop Creighton, and Sir Max Beerbohm.

**Meru.** Mountain of Tanganika. It lies W. of Kilima-Njaro, at an alt. of 14,935 ft. On the slopes is Arusha, occupied by the British. March 20, 1916.

**Merv.** Town of Turkmen S.S.R. On the rly. from the Caspian to Central Asia, it is situated in an extensive oasis between the Oxus (Amu-Daria) and N.E. Persia. This is extremely fertile, producing abundant wheat, barley, rice, cotton, and melons. The town is on the river Murghab. The chief industry is agriculture; carpets,

silken stuffs, and silver ware are manufactured. Merv is of strategic importance, as it lies on the road to Persia and Herat. After being successively in Persian, Macedonian, Arab, Seljuk, Mongol, Uzbek, and Turkoman hands, it was surrendered by the latter to Russia in 1883. Since then a new town has sprung up on the opposite side of the river. In the summer of 1918 a Bolshevik force defeated the Allied Transcaspian troops in the district and captured Merv on Aug. 22.

**Méryon, CHARLES** (1821-68). French etcher. Born in Paris, Nov. 24, 1821, he was the son of an English physician and a French dancer. From the naval school at Rest he went to sea. It was not until 1846 that he adopted the artistic profession and settled in Paris. Colour-blindness preventing him from being a painter, he devoted himself to etching. He became a pupil of Bléry, and began work on the series of etchings of Paris scenes which afterwards made him famous. Symptoms of mental disease showed themselves in 1858-59 and Méryon was removed to the asylum at Char-enton. From 1866 he was again confined there, dying Feb. 13, 1868. Méryon produced a great many plates.



Charles Méryon, French etcher After Bracquemond

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**Mesa** (Span. from Lat. *mensa*, table). In geography, large, tabular, steep-sided blocks of land produced by the dissection of a plateau by the agency of rivers. The term is in common use in the great plateaux of the western states of the U.S.A. Further denudation reduces the mesa in size or detaches a part from the main mass. These smaller, flat-topped hills, known as buttes, are comparable with the tors of S.W. England and the kopjes of S. Africa.

**Mesa** or **LA MESA.** Town of Colombia, S. America, in the dept. of Cundinamarca. Beautifully placed in the midst of plantations, alt. 4,000 ft., it is 30 m. by rly. W. by S. of Bogotá. The surrounding district produces sugar, coffee, cocoa, and cereals, and there is trade in salt and hats.

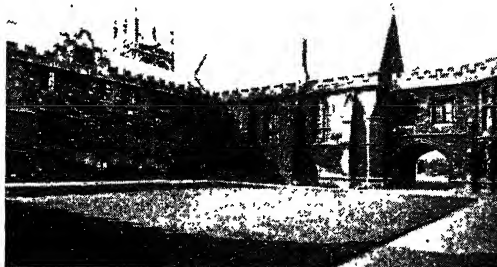
**Mesa de Herves.** Mountain of Colombia, in the Andes, near Bogotá. A table-topped mass, its slopes are snow-covered all the year round. Its height is 18,350 ft.

**Mesaticephalic** or **MESOCEPHALIC** (Gr., medium-headed). Term usually describing human heads and skulls whose breadth is between three-fourths and four-fifths of their length. They are



Charles Méryon. Pont Notre Dame, 1852. One of this artist's etchings of Paris views

thus intermediate between long-headed (see Dolichocephalic), and round-headed, with a cephalic or cranial index from 75 to 80. Mesoccephalic designates medium skull-capacity (1,350 to 1,450 c.c.). Medium-headed forms are found among the Ainu, Tasmanians, Copts, Chinese, and some N. and S. American Indians. See Man.



Merton College, Oxford. Quadrangle, showing the hall and tower of strength

**Mescal.** Name of a kind of brandy distilled from pulque, which is the fermented sap of the American aloe. See Agave.

**Mescal Button** (*Anhalonium lewinii*). Succulent plant of the family Cactaceae, native of Mexico and Texas. It is interesting chiefly on account of its power to produce visions after the manner of hashish (*q.v.*), though of a different character. The chewing of mescal is an old practice of the Kiowa Indians in their religious ceremonies, and the rite has spread to the other tribes of the southern plains of the U.S.A. Weir Mitchell, Havelock Ellis, and others have recorded their experiences when under its influence.

**Mesdag, HENDRIK WILLEM** (1831-1915). Dutch painter. Born at Groningen, Feb. 23, 1831, he was at first engaged in commerce, but on the advice of Josef Israels took up painting and studied under Alma-Tadema in Brussels. Afterwards he devoted himself to marine painting. He lived at The Hague, but most of his time was spent at Scheveningen and other seaside resorts, where the sea and its ships occupied his brush. His art is sober in colour, but intensely naturalistic. Died July 10, 1915.

**Mesembryanthemum** (Gr. *mesēmbria*, noon; *anthos*, flower). Large genus of plants of the family Ficoideae. Mostly natives of S. Africa, they have succulent leaves and bear pink or white flowers suitable for culture in the rock garden. They thrive best in a light soil and sunny aspect, and are a striking feature of the Scilly Isles. *M. crystallinum* is the well-known ice plant. See Ice-Plant.

**Mesentery.** Fold of peritoneum which attaches the intestine to the posterior abdominal wall.

**Mesh.** Term used generally to describe all screens used as sieves. It has a particular application in powder metallurgy, being defined as the screen number of the finest screen of a specified standard scale, through which all of a powder sample will pass. All metal powders must be carefully sized before mixing before the pressing and sintering processes. See Powder Metallurgy.

**Mesha.** King of Moab about 850 B.C. On the death of Ahab of Israel, he withheld his annual wool tribute (2 Kings 3). He was besieged by Jehoram of Israel in Kir (Kerak), and sacrificed his son to Chemosh. A contemporary inscription records these campaigns from the Moabite standpoint. See Moabite Stone.

**Meshcheryak.** People of Finnish stock in E. Russia. Now numbering about 180,000, they migrated in the 15th century from the Oka basin. The E. branch, near Ufa and Perm, rank in name, customs, and religion as Bashkirs, although broad-faced and blond-haired. The W. branch, near Saratov, is more Russified.

**Meshed, MESHED, OR MASHHAD.** Town of Persia. The capital of the prov. of Khorassan, it is regarded as a holy city by the Shia Mahomedans, because it contains the tomb of the Imam Riza, the son of Ali, and therefore the grandson of the Prophet. The dome, minaret, and interior of the portico of his shrine are covered with gold plate on copper, and with coloured arabesques and inscriptions from the Koran written upon medieval tiling of superb workmanship. Until 1936 no unbeliever was allowed within the precincts, but the place is now open to all. Situated in a fertile plain, Meshed trades in carpets, silks and shawls, and a sword-making industry. It has a court of appeal. It derives much of its prosperity from pilgrimages to the Imam's mausoleum, visited each year by upwards of 200,000 Shiites. Population 176,000.

During the First Great War Meshed was occupied by the British in 1918 to protect the Transcaspien rly., a short distance N. of the town, from Bolshevik attacks. An East Persian cordon field force was constituted, and a motor road built from Duzdarp, Baluchistan, to Meshed and thence to Ashkhabad. The whole enterprise cost nearly £100,000,000. Meshed was abandoned in 1920. In the Second Great War it was a vital staging point on the route by which motor transport carried supplies from India to Russia. The town was occupied by Soviet troops, 1941-46, and was the scene of severe fighting during the Persian revolt after the war.

**Mesitylene** OR SYMMETRICAL TRI-METHYL-BENZENE. Light oil hydrocarbon obtained from coal-tar. It is also prepared by distilling acetone with sulphuric acid, or by dissolving methyl acetylene in sulphuric acid and distilling with water.

**Mesmer, FRIEDRICH ANTON (OR FRANZ)** (1734-1815). German physician, inventor of mesmerism. Born at Iznang, Baden, May 23, 1734, he graduated M.D. in Vienna. Dabbling in astrology and electricity, he invented "animal magnetism" and apparently discovered hypnotism, though it was not yet

so called. In 1766 he published his first work (in Latin) on the Influence of the Planets on the Human Body. Meeting Gassner, who effected cures by manipulation, Mesmer discarded magnets, and in Paris from 1778 he undoubtedly cured many people by self-suggestion; but he used much



F. A. Mesmer,  
German physician

nummery and was denounced as an impostor by the faculty. Nevertheless he had a great success, and scientific investigation of the phenomena connected with his practices led to the rediscovery of hypnotism. He died at Meersburg, March 5, 1815.

**Mesmerism.** Name given to a method of producing a trance or sleep, first practised by the above Franz Mesmer. Early attempts at mesmerism were a combination of trickery and charlatanism, and the later scientific study of the process has become better known under the name of hypnotism. Mesmer, who undoubtedly discovered some of the rudiments of hypnotic processes, believed that an occult force pervaded the universe and was one which, properly controlled, had a great effect on the nervous system of human beings. His consulting-rooms were always dimly lighted, hung with mirrors, and filled with the scent of burning chemicals, Mesmer himself dressing as a magician. The way Mesmer produced his effects was copied by swindlers and tricksters of all kinds, with the result that mesmerism fell into disrepute until the subject began to be scientifically studied towards the end of the 19th century. See Hypnotism; Magic.

**Mesme Process.** In old English law, those writs which were issued in an action between the first and the last process, i.e. between the first writ and the writ of execution. The Debtor's Act, 1869, finally abolished arrest on mesme process, except that a person who owes £50 or more can be arrested, if it be shown that he is about to escape out of the jurisdiction to avoid his liability. *Pron. mean.*

**Mesne Profits** (Lat. *medius*, intermediate). Rents and profits of an estate accruing to an occupier remaining in unlawful possession, e.g. after the expiry of a lease. An action of mesne profits is an action of trespass brought by the true



owner to recover the rent and profits which the trespasser has, or might have, made during his improper occupation. It may be joined with an action for recovery of the estate, or brought after an order of ejectment. A claim for mesne profits is unliquidated, and damages may be given, from which ground rent paid by the tenant should be deducted.

**Mesocephalic.** See Mesaticephalic.

**Mesoderm.** In embryology, the middle germinal layer of an embryo. In all organisms which possess two or more definite tissues arising from the fertilised egg, the embryo forms three separate layers, an outer, inner, and middle, the mesoderm or mesoblast. The cavity which results from the dividing of the mesoderm becomes the body cavity. See Embryology.

**Mesolithic** (Greek, *mesos*, middle, *lithos*, stone). Term used to connote the period in human culture between the end of the Palaeolithic period, which closes with the Pleistocene of the geologists, and the rise of the Neolithic culture when man began to grow his food. The Mesolithic is the age in which man adapted himself to the change from glacial to temperate and forest conditions. The chief Mesolithic cultures of Europe are: Azilian, Tardenoisian, Asturian, Maglemosian, Kitchen Midden, and Campignian.

**Meson.** In physics, a fundamental particle predicted by Yukawa to account for observed beta-ray disintegration effects. Subsequent cloud chamber photographs have revealed the existence of particles with higher penetrating power than electrons and possessing various masses which average about 200 times that of the electron. The charge of a meson is equivalent to that of the electron, but it may be positive or negative. It has a short life. Artificial mesons were first produced in 1948 by the giant cyclotron in the laboratory of California university.

**Mesophyll** (Gr. *mesos*, middle; *phyllon*, leaf). Spongy ground tissue of leaf structure lying between the upper and the lower layers of epidermal cells. It consists of soft-walled cells filled with protoplasm, in which are numerous chlorophyll granules and a more solid nucleus. The upper layers of mesophyll consist of elongated palisade cells packed closely together side by side. The lower layers, or spongy parenchyma, are loosely disposed, so that there are considerable air spaces

between them, communicating with the stomata or breathing pores, permitting respiration. See Cell; Leaf; Stomata.

**Mesopotamia** (Gr. between the rivers). Greek translation of the Semitic name for the district between the Euphrates and the Tigris. In the O.T. (Gen. 24, v. 10) it appears as Aram Naharaim, i.e. Syria of the rivers. Originally the name of the region N.W. of Bagdad, the term Mesopotamia was extended to the whole area known since 1919 as Iraq (*q.v.*).

Current knowledge of ancient Mesopotamian history is due mainly to the spade. Between 1811-28 the English travellers C. J. Rich, Buckingham, Ker Porter, and Mignan, attracted by the Biblical sites, first stirred popular interest in the country. Later came the surveys of Chesney (1835-37) and Felix Jones (1846-50) and the excavations conducted by P. Botta at Khorsabad and Henry Layard at Nineveh Calah (Nimrud) and Babylon in the 1840s. Subsequent excavations by scholars of many nations have uncovered other important sites, including Lagash, Nippur, Agade (Accad), and Ur. Among the most important discoveries have been the cuneiform texts, abundant on all sites, but especially in the great libraries of clay tablets preserved in the palaces of the Assyrian kings. The cuneiform records have furnished us the annals of kings and cities, codes of laws and details of administration, as well as regulations concerning religious observances, and poems and legends such as the Epic of Creation found on both Assyrian and Babylonian sites.

From 1900 to 1916 the German Oriental Society carried on excavations on the site of ancient Asshur, now called Kala Shergat (Qal a Shergat) and made many important discoveries. The most important of these was an Assyrian code of law containing about 100 laws which, however, make it evident that the complete code was much longer. The exact text is inscribed on three tablets belonging to about 1500 B.C. It is a harsher and less humanitarian code than that of Hammurabi (*q.v.*). Masters have much more power over servants, husbands over wives, fathers over children, than in the Babylonian and Biblical codes. The phrase "may do as they like" occurs constantly when the subject is the punishment to be meted out to a servant. In one particular, however, the Assyrian code is more humanitarian, i.e. in the case

of a widow. Mutilation as a punishment is common in the Assyrian law book often for trivial offences. Money fines bulk largely in both codes. Forced labour is a form of punishment in the Assyrian, but not in the Babylonian code.

Mesopotamia is divided into two main regions, the S. part, ancient Babylonia, extending from Hit to the Persian Gulf and itself divided into the upper and lower sections of Akkad, primarily Semitic, and Sumer, primarily Sumerian, and the N. uplands, ancient Assyria, with Nineveh (near Mosul on the Tigris) at its centre.

#### Earliest Civilization

Although traces of Palaeolithic man have been found in Palestine, the earliest occupation of Babylonia appears to have been Neolithic. Explorations on behalf of the British Museum in 1918 at Eridu, Ur, etc., showed that the earliest occupants of S. Babylonia were of the same race as the earliest peoples of Elam, closely connected with those of Anau, 300 m. E. of the Caspian. This Elamitic people of S. Babylonia was dispossessed by Sumerian invaders, probably from a mountainous N. district, who were in occupation of the S. delta certainly in the 4th-3rd millennia B.C. The Sumerians were the inventors of cuneiform writing, and are the first people known to have used the potter's wheel. There was early connexion with Egypt, shown by such finds in both areas as mace-heads, seal-cylinders, etc., and Egypt seems to have owed some elements of its civilization to the Sumerians. After the Sumerians came the Semites from Arabia, who established themselves in Akkad, and these gradually absorbed Sumerian civilization and writing.

About 3000-2500 B.C. Babylonia was divided between numerous city-states, warring with each other, building temples, and carrying out reforms. Certain cities at times exercised overlordship; in c. 2890 B.C. the Sumerian city of Erech dominated the whole land as far as the Mediterranean; a generation later the Semitic Sargon of Akkad became supreme; Sumerian Ur united Sumer and Akkad about 2465.

A second wave of Semites (the Canaanite or Amorite) swept down on Babylonia at the end of the third millennium, and established the first dynasty of Babylon of which the most remarkable figure is the conqueror and law-giver Hammurabi (2123-2081 B.C.), whose code of civil and criminal



law, the earliest known code of laws, has been discovered.

The Hittites of Anatolia made a great raid on Babylonia in the 20th century B.C. Two hundred years later this was followed by the descent of the Kassites (*q.v.*) from the E., who conquered Babylonia and held it for 600 years until c. 1177 B.C., although the S. remained Sumerian for part of this period. These upheavals resulted in an overflow of Palestine into Egypt, when the Hyksos (c. 1800 B.C.) invaded the Nile lands, to be dispossessed by the Egyptian king Aahmes I, in the 16th century. The subsequent campaigns of Thothmes III against the Hittites in N. Syria culminated in the defeat of the Hittite armies at Kadesh by Rameses II, in the 13th century. In the 14th century a third Semitic wave, the Aramaeans, established a kingdom in N. Syria.

#### Assyrians and Persians

After the wars with Babylonia in the 13th century Assyria became the dominant power of E. Mesopotamia, under Tiglath-Pileser I, c. 1100 B.C., but suffered an eclipse for more than 100 years. Then she rose again under Ashurnasir-pal, 884-860 B.C. and Shalmaneser, 860-825 B.C., and for 200 years more she was mistress of an empire which spread even to Egypt. The crash came in 612 B.C., when Cyaxares of the Medes and Nabopolassar of Babylon destroyed Nineveh, and with it the kingdom. Babylon then had a brief revival culminating in the reign of Nebuchadnezzar II, until 539, when it was captured by Cyrus, and Persia became dominant.

The Persian empire, of which Babylonia was one of the chief parts, lasted until the invasion of Alexander the Great, who defeated Darius III in 333 at Issus and 331 at Arbela near Nineveh; his death at Babylon in 323 was followed by wars, but by 312 Seleucus, one of his chief generals, secured the central part of his empire, including Mesopotamia. The Parthian Arsacid dynasty, after revolting from the Seleucids in 249, ultimately defeated them in 129. Rome, about 66 B.C., became involved in wars with Parthia. In A.D. 115 Trajan advanced into Mesopotamia, but was compelled to retreat. The Parthian dynasty came to an end in A.D. 226, and the Sassanids became overlords of Persia and threatened even India at this time. Then followed a long series of wars with Rome; in 363 Julian the Roman emperor defeated the Persians near Ctesiphon, but was forced to retire.

About the 6th century the Turks began to appear in Persia. In 637 the Persians were decisively beaten at Cadesia by the Arabs, who in the next year annexed Mesopotamia. Basra and Kufa were founded in 638, and the Sassanid period ended in 632. Henceforth the Arabs ruled Mesopotamia for 400 years, and under the Abbasids Bagdad absorbed the hegemony.

But the Seljuks (originally from Turkistan) overran the land in the 11th century. Again, after the death of Jenghiz Khan in 1227, another Mongol wave broke in, and with the capture of Bagdad by Hulaku in 1258 came the end of the Abbasid caliphs. It was invaded again, by Tamerlane (or Timur) 1393-94. For a hundred years it was disputed indecisively between Persia and Turkey, under whose suzerainty it passed in 1516, and so remained until the Turkish defeat in the First Great War.

## MESOPOTAMIA CAMPAIGN OF 1914-18

*This general sketch of British fighting on one of the so-called "minor" fronts of the First Great War is supplemented by articles on the various engagements of the campaign, e.g. Bagdad; Kut. See also First Great War*

The Mesopotamian Expeditionary Force left India on Oct. 16-18, 1914, to rendezvous at Bahrein. On Nov. 6, within a week of the entry of Turkey into the war, a force landed and occupied Fao fort and town. The main advance began Nov. 17. Basra fell on Nov. 21, Kurna on Dec. 8.

A critical period followed, while the Turks were concentrating on the Euphrates for a thrust to recapture Basra, but they were routed at Shaiba, April 12-14, 1915. This victory enabled the British to deal with enemy detachments on the Tigris and the Karun. With the capture of Amara, on the Tigris, June 3, the main objects of the expedition were achieved. The British held the delta of the Shatt-el-Arab, and were thus in a position to protect the Anglo-Russian oilfields at Ahwaz, and to safeguard the gulf, and close to Germany her main route to India. But political considerations required the force to be moved on towards Bagdad. The advance of Maj.-Gen. Townshend and his 6th div. added lustre to the Indian army. It included the victory at Kut-el-Amara, Sept. 29, and culminated, Nov. 22-25, in the fighting at Ctesiphon, 18 m. from Bagdad, when the force annihilated a Turkish division. But the division was too thinned to hold the position against Turk-

*Bibliography.* Travels and Research in Chaldaea, W. K. Loftus, 1857; Nineveh and Babylon, A. H. Layard, 1867; Personal Narrative of the Euphrates Expedition, W. F. Ainsworth, 1888; Délégalion en Perse, De Morgan, 1900; The Nearer East, D. G. Hogarth, 1902; Explorations in Bible Lands during the 19th Century, H. V. Hilprecht, 1903; Lands of the Eastern Caliphate, G. Le Strange, 1905; Amurath to Amurath, G. L. Bell, 1911; History of Babylon, L. W. King, 1915; The Land of the Two Rivers, E. R. Bevan, 1917; The Irrigation of Mesopotamia, W. Willcocks, 1917; Cambridge Ancient History, 12 vols., 1923-1939; Mesopotamia: the Babylonian and Assyrian Civilization, L. J. Delaporte, 1925; The Sumerians, C. L. Woolley, 1928; A History of the Ancient World, vol. 1, 2nd edn., M. I. Rostovtzeff, 1929; History and Monuments of Ur, C. J. Gadd, 1929; Ur of the Chaldees, C. L. Woolley, 1930; Ancient History of the Near East, H. R. Hall, 8th Edn. C. J. Gadd, 1932.

ish reinforcements, and Townshend was obliged to fall back on Kut. Two Indian divisions moved from France were detailed to reinforce Townshend but had not completed embarkation when news of Townshend's investment arrived. This relieving force under Gen. Aylmer advanced from Ali Gharbi on Jan. 5, 1916; but one of the divisions was virtually immobilised in actions at Sheikh Saad, the Wady, and Umm-el-Henna, Jan. 7, 13, and 21. Transport broke down and troops were thrown into the attack as they arrived.

#### Attempt to Relieve Kut

Up to this time the campaign had been directed by the govt. of India. In Feb. the War office took it over. Townshend reckoned that he had sufficient supplies in Kut to hold out until the end of March. But to reach Kut the British had either to force the strong Turkish position of Umm-el-Henna, between the river and a wide marsh, or work round to the Turkish rear on the right bank of the river. The latter course was adopted. The attack began on March 8, and the next six weeks were spent in repeated attempts to break through Turkish defences. Aylmer was replaced by Gorrington on Mar. 12, and Umm-el-Henna was evacuated by the Turks on the night of April 4-5, falling back on a new position at Sanna-i-Yat, a few

miles in the rear. The British were faced with the same problems as before, and the difficulties were now increased by floods. Three desperate but ineffectual assaults were made by troops floundering in water, their rifles jammed with mud. Further sacrifice was averted by the fall of Kut, with the surrender of 3,000 British and 6,000 Indians starved after an heroic defence of nearly five months. The relieving force had lost nearly 22,000 men.

Gen. Maude succeeded to the command, Aug. 16, and took the field in Dec. in an attempt to open the road to Bagdad. After two months of continuous fighting against a stubborn defence, the British drove the Turks from their elaborate trench system on the right bank of the river, and a crossing was effected on Feb. 23, 1917. Sanna-i-Yat was forced, the river made free for navigation, and the door to Bagdad made open. The Turkish commander, Khalil Bey, ordered a general retirement. The pursuit was hotly pressed. The Turkish rear-guard stood at the Diala, but a Lancashire brigade forced the passage in a gallant action, and the British entered Bagdad on March 11.

#### Securing the Position

But the city was not secured until Turkish points on the Tigris, Euphrates, and Diala were carried. Columns pursued the Turkish army corps on both banks of the Tigris, a third column moved to the Euphrates, and a fourth advanced by the Diala over the Jebel Hamrin range to cut off a Turkish corps which was falling back over the Persian border from attacks by Russian forces. The advance of this column cleared Persia of the Turks, but the retiring Turkish corps was able to extricate itself from the British pursuit and attempted to link itself with the left bank column of the Turkish corps on the Tigris. After a series of hard-fought minor actions it was finally routed in the sanguinary battle of Band-i-Adhaim, April 30.

Meanwhile the British column on the right bank of the Tigris had advanced, during decisive victories at Mushediya, March 14, and Istablat (April 21-23). The latter action gave Maude the Turkish railroad at Samarra and thus secured his hold on Bagdad.

British gains were extended during the winter of 1917-18. On the Euphrates they inflicted two crushing defeats on the Turks at Ramadie (Sept. 29) and Khan

Bagdadi (March 27, 1918), the enemy force on each occasion being almost entirely captured. But meanwhile the defection of Russia had opened to Germany an easier line of penetration to the East by way of the Caucasus, and the British were obliged to counter this move by the establishment of posts in Persia and communications to the Caspian sea. Her attempt to save Baku from the Turks by a small force sent to the assistance of the Russian and Armenian garrison (Aug.-Sept., 1918) failed, but the thin line between Bagdad and the Caspian was thereafter held intact.

#### End of the Campaign

Gen. Maude, who died of cholera in Bagdad, Nov. 18, 1917, was succeeded by Gen. Marshall. During the spring and summer of 1918 the force was mainly engaged in settling and developing the country, but the British military campaign was brought to a brilliant close in the autumn with an advance on Mosul. Kirkuk was re-entered on Oct. 24; Kala Shergat, 50 m. S. of Mosul, was captured Oct. 28; and on the following two days Marshall defeated the Turks a few miles further N. in a decisive battle, destroying or capturing their entire forces. Turkey was granted an armistice on Oct. 30, and Marshall occupied Mosul on Nov. 3, 1918.

There was strong criticism of the details of the campaign. A very small Turkish force, with good interior lines, was able to contain a very considerable British force, and it was argued that the latter should have cut their losses after the fall of Kut, and delivered the counter-stroke nearer the heart of the Turkish system. The Turks depended for munitions on all their fronts on the single rly. line from Constantinople to Aleppo, and if the British had taken Aleppo they could have held the delta of the Shatt-el-Arab with a single division. The British troops N.E. and W. of Bagdad did not materially help Allenby's army in Palestine.

On the other hand, when the British struck at Bagdad they were counting on simultaneous pressure by the Russian army in the North as the upper half of a pincer movement; but the Russian arm was paralysed. The occupation of Bagdad immensely increased British prestige, secured Persian neutrality, weakened the fanatical influences at work in Afghanistan and on the Indian border, and averted a Pan-Islamic conflagra-

tion which might have created a dangerous situation in India. Possibly the chief vindication of the forward policy is that it established British command of communications between Bagdad and the Caspian. *Consult* Official History of the Great War—The Campaign in Mesopotamia, F. J. Moberly, 4 vols., 1923-27; also The Long Road to Bagdad, E. Candler, 1919; War in the Garden of Eden, K. Roosevelt, 1920; My Campaign in Mesopotamia, Maj.-Gen. Sir C. V. F. Townshend, 1920.

**Mesothermal Deposits.** In mining geology, a class of mineral deposits. They are formed from ascending thermal solutions under intermediate temperatures and pressures, the solutions having a genetic connection with igneous rock formation. Deposits are generally found in sedimentary or metamorphic rock near the parent igneous rock, which may or may not be exposed. The temperature of their formation is taken to range from 175° to 300° C. The pressure is generally related to the depth of deposition, which ranges from 4,000 to 12,000 ft. below the original surface.

Important deposits in this group include those of gold (California and Cordilleran region, U.S.A.; Bendigo, Australia); silver-lead (British Columbia; Colorado); silver-lead-zinc (Idaho, U.S.A.); copper (Butte, Montana; Rio Tinto, Spain); and others. The ore minerals consist of sulphides, arsenides, and sulpharsenides of the metals; the predominant gangue minerals are quartz and the carbonates. They occur both in the vein and in the adjacent wall rock. Replacement of one mineral by another is common in the veins; the vein minerals may show banding and occasionally colloform structures. *See* Comb Structure.

**Mesozoic Era.** In geology, one of the main divisions of time. It came between the Palaeozoic and the Cainozoic eras, and is divided into three periods, the Triassic, Jurassic, and Cretaceous. Mesozoic rocks are found in Great Britain, Europe, and N. America, and are chiefly limestones. The era was one of giant reptiles, and during this period mammals and birds came into existence, and cycads, conifers, and ferns were the chief flora.

**Mesquite.** Variant spelling of Mezquit (*q.v.*), American tree.

**Mesrob** or **MESROP**, MASHDOTS (c. 354-441). Inventor of the Armenian alphabet. He was a

prelate of the Armenian Church, active in repressing idolatry and heresy. In 406 he compiled the Armenian alphabet, probably from Greek and other sources, consisting originally of 36 letters, to which two have since been added. He directed the preparation of the first Armenian version of the Scriptures.

**Mess.** Term originally meaning a dish of prepared food, sent to the table (*cf.* a mess of pottage). It is now applied to the quarters in which groups of people take meals together, particularly in the armed forces—officers' mess, sergeants' mess, etc. In general the word covers ante-rooms, etc., attached to the dining quarters, and is used by extension to describe the body of members who use the mess. Originally a mess in this sense was a group of four people who were helped from the same dish, and in London's Inns of Court this number is retained.

**Messenger, André Charles Prosper** (1853–1929). French composer. Born at Montluçon,



André Messenger,  
French composer  
H. Manuel

Dec. 30, 1853, he studied under Saint-Saëns, and became a church organist in Paris, but soon was composing for the stage. His first comic opera, *La Fauvette du Temple*, was produced in 1885. Of many light operas the best-known include *La Basoche*, 1890; *Les P'tites Michus*, 1897; *Véronique*, 1898 (popular in England and the U.S.A.); *Fortunio*, 1907; *L'Amour Masqué*, 1923. He also composed music for an English operetta, *Monsieur Beaucaire*, 1919. His three-act ballet, *Les Deux Pigeons*, 1906, was long in the repertory of the Paris Opera, of which he was artistic director 1907–13. A similar post had been held at Covent Garden, 1901–06. Messenger's music is notable for elegance of texture. He married Hope Temple, composer of ballads. He died Feb. 24, 1929.

**Messageries Maritimes de France.** French steamship line. Originally founded as the Messageries Impériales in 1851, it served Mediterranean ports, but later extended its activities to India, Indo-China, China, Australia, E. Africa, Madagascar, and S. America. In 1921 the Société des Services Contractuels des Messageries Maritimes was formed to

operate the passenger services, but the Compagnie des Messageries Maritimes remained in charge of the whole fleet. Heavy losses were suffered in both Great Wars, more than 60 p.c. of the fleet being destroyed in the Second. By 1947,



however, all pre-war services had been resumed and a cargo service to S. Africa inaugurated. The head office is in Paris.

**Messalina, VALERIA** (ex. A.D. 48). Roman wanton. Wife of the Roman emperor Claudius and

mother of Britannicus, she dominated her weak husband and, with his freedmen Pallas and Narcissus, virtually ruled the empire. Matters came to a crisis when the empress, notorious even in her day for licence, having become enamoured of Gaius Silius, openly married him. Narcissus, fearing for his own position, opened the eyes of Claudius to his wife's character, but only with difficulty did he convince the emperor that the pair were plotting against his (the emperor's) life. Claudius then ordered Messalina to be put to death.

**Messalla Corvinus, MARCUS VALERIUS** (d. c. 1 B.C.). Roman statesman, soldier, and man of letters. He joined the republican party and fought with distinction at the battle of Philippi, 42 B.C. Subsequently pardoned by Octavian, he rendered him valuable services in his struggle to obtain the mastery of the Roman world. Soon after Octavian became the emperor Augustus, Messalla retired into private life. An author of some note, he was a generous patron of letters.

**Messenia.** Country of ancient Greece, in the S.W. of Peloponnesus, bounded N. by Elis and Arcadia, and E. by Laconia. Its inhabitants were Dorians, with a blend of pre-Dorian elements. The history of the country is largely a long series of wars with the neighbouring Spartans, who conquered it towards the middle of the 7th century B.C. A large portion of the inhabitants emigrated, and the remainder were reduced to the condition of helots. In 464 B.C. they revolted, and after holding out for five years were allowed to emigrate

to Naupactus. After the battle of Leuctra had broken the Spartan power in 371, Epaminondas collected the Messenians from their places of exile and re-established them in their country, founding the city of Messene as their capital. With the Roman conquest of Greece in 146, Messenia became part of the province of Achaia.

**Messenia, KALAMATA, OR KORONI, GULF OF.** Inlet of the Mediterranean which indents the S. coast of Morea, Greece. About 25 m. long, it is at the mouth about 35 m. across, and is separated from the Gulf of Laconia on the E. by a peninsula of which Cape Matapan is the termination. The seaport of Kalamata lies at the head.

**Messerschmitt, WILHELM** (b. 1898). German aircraft designer. Educated at Munich, he founded his own manufacturing company at Augsburg in 1923. With the advent to power of the Nazi party, his designing genius was allowed full expression, and in 1937 he was elected honorary professor and a member of the war council. The Me 109 single-seat fighter (*see* Aeroplane illus., p. 132) flew in the Spanish Civil War. In April, 1939, a racing version reached the then record speed of 481 m.p.h.; in 1944–45 the standard Me 109G, with full war load, including three 20-mm. cannon and two machine-guns, could attain 428 m.p.h. and fly in action at nearly 40,000 ft. The engine was a Daimler-Benz D.B. 605. Other outstanding Messerschmitt products were the Me 110, 210, and 410, all twin-engined fighter bombers; the rocket-propelled Me 163, fastest aircraft of the Second Great War (over 550 m.p.h.); and the 262 twin-engined fighter, most successful of German jet-propelled machines.

**Messiah** (Heb. *Mashiach*, one anointed). Title for an expected leader of the Jews, who should deliver the nation from its enemies and secure its permanent triumph and peace. It is equivalent to the Greek word, Christ. The ceremony of anointing was used in O.T. days in the consecration of a man for the office of king, priest, or prophet, who by this ceremony became the representative and agent of Jehovah.

The Messianic idea is implicit in early prophecy, and took definite shape in those of Isaiah and Micah during the period of Assyrian aggression. Its fully developed form dates from about



Messalina,  
Roman empress  
From a coin

the period of the Exile. Prophecies of the period indicate that the Messiah should be at once a prince, prophet, and victorious captain. Whether the description of Deutero-Isaiah of the suffering servant of Jehovah refers primarily to the nation or to an individual is much disputed, but in any case the essential idea of world-salvation through vicarious suffering formed thenceforth an element in the Messianic idea. The remarkable fulfilment of these prophecies in the Person and Work of Jesus was put forth early in the history of Christianity as a convincing proof that He was the promised Messiah; hence the universally accepted title of the Christ.

**Messiah.** Oratorio by Handel. Set to texts from the Bible arranged by Charles Jennens, it was composed Aug. 22-Sept. 14, 1741, and received its first performance on April 13, 1742, in Dublin, for charity. The work has always been held in peculiar affection in England. In three parts, dealing broadly with the prophecy of Our Lord's coming, His passion, and the redemption of the world, it runs through a range of emotions scarcely paralleled in music, allotting to the solo singers (customarily four), the chorus, and the orchestra, the expression of every mood from ecstatic joy to passionate grief. Extra accompaniments have been added by Mozart and others, but now the tendency is to revert as far as possible to Handel's own scoring. See *Hallelujah Chorus*; Handel. Consult *Messiah*, J. Herbage, 1948.

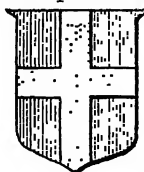
**Messianic Hope, THE.** Term used in Hebrew and Christian theology. It is applied to the expectation, constantly expressed in the O.T., that a king of the house of David would arise to deliver Israel from oppression; and to the anticipation by Christians of the second coming of Jesus Christ, whom they recognize as the true Messiah. See *Messiah*; consult *The Jewish and the Christian Messiah*, V. H. Stanton, 1886; *Messianic Prophecy*, C. A. Briggs, 1886.

**Messidor.** Tenth month in the year of the French Revolutionary calendar. It began on June 19 or 20, its name meaning the month of harvest.

**Messina.** Maritime prov. of N.E. Sicily. It is bounded N. by the Tyrrhenian Sea, and separated from Italy on the E. by the Strait of Messina. The surface is wholly hilly, and is traversed by moun-

tain ranges falling N. and E. to the sea, the only rlys. clinging to the coast. The highest point is Monte Sori, alt. 6,055 ft. Messina is the capital, other important towns being Milazzo, Barcellona, and Caronia, all on the N. coast. The chief products include sulphur, copper, corn, flax, fruit, oil, and wine. Area, 1,254 sq. m.

**Messina** (anc. *Zancle*, *Messana*). City and seaport of Sicily, capital of the prov. of Messina. It stands



Messina City arms

on the Strait of Messina in the N.E. of the prov., 70 m. N. by E. of Syracuse. The harbour is one of the best in Europe. The town is backed by mountains, and from its streets fine views can be obtained of the Calabrian mainland, as the strait is here only about 2 m. wide. The roads are wide and paved with lava. Always subject to seismic disturbance, and devastated by plagues, Messina has yet remained a handsome and prosperous city. It was almost completely destroyed in 1908 by the disastrous earthquake of Dec. 28, with a loss of 77,000 lives. Some façades of churches and palaces were left. The wrecked cathedral had been founded in 1098, and finished by Roger II. Rebuilding had brought the city by 1936 back to a pop. of 195,958.

Messina formerly ranked next to Palermo in Sicilian importance. The normal exports are wine, oil, essences, pumice stone, oranges, lemons, and liquorice. Manufactures have included silk, muslin, linen, chemicals, and coral articles. Fishing is important.

Founded about the 9th century B.C., the city was first named Messene by Anaxilas of Rhegium, who occupied it about 490 B.C. It fell successively to Athens, Carthage, and the Mamertines, and became the cause of the first Punic war, Rome capturing it in 241 B.C. It was taken by the Saracens in 830, and by the Normans in 1062. A century later it passed to the house of Hohenstaufen, and late in the 13th century to Spain, which retained it until 1713. British troops occupied the city for several years before the peace of 1814. In 1848 it was taken by Neapolitan troops. From Messina the German cruisers Goeben and Breslau, escaped into the Dardanelles, Aug. 1914.

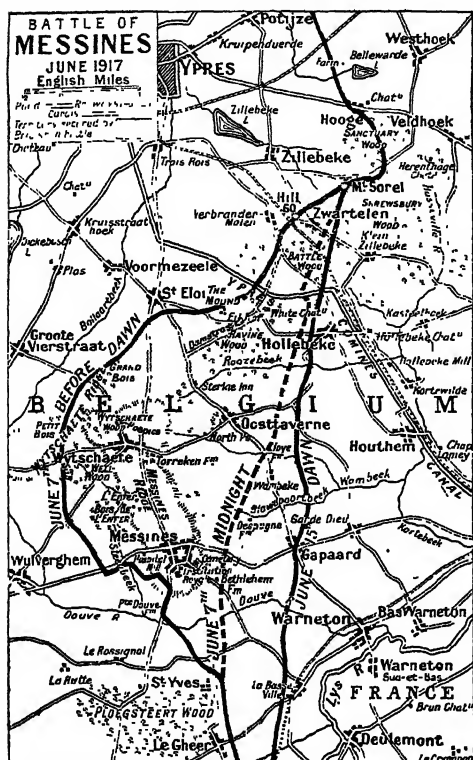
The fall of Messina in the Second Great War marked the end of the

38-day campaign in Sicily. On Aug. 16, 1943, there were simultaneous landings by British forces at Scaloletta, 8 m. S. of the city, and U.S. forces near Milazzo, 8 m. to the W. U.S. troops reached Messina that evening, British units joined them early next morning. The Germans had withdrawn to the mainland. The harbour was wrecked, but though the city had been bombed from the air it suffered no other serious damage.

**Messina, STRAIT OF** (anc. *Fretum Siculum* or *Mamertinum*). Sea passage between Sicily and Italy, connecting the Tyrrhenian and Ionian Seas. About 20 m. in length, its width varies between 2 m. and 15 m. The deep channel and strong current hinder navigation. See *Scylla* and *Charybdis*.

**Messines Ridge.** Rising ground in Belgium, N. of the village of Messines, 6 m. S. of Ypres; a prominent battleground of the western front in the First Great War. The village and ridge were seized by the Germans on Nov. 1, 1914, after a two-day stand by the British cavalry corps. Its ruins thereafter dominated the British positions to the W. until the battle of Messines, June 5-15, 1917. The German positions were extraordinarily strong, their line forming a deep salient in the British front, with total length of 10 m., overlooking the British position at Ypres. Forces engaged in that battle were the British 2nd army (Plumer), with 12 divisions, approx. 200,000 men, and the 4th German army (Sixt von Arnim) of 14½ divisions. The British object was to capture the ridge, with the villages of Messines and Wytschaete at the S. and N. extremities respectively, also the second German defence line (Oosttaverne line) well to the E. of the ridge. As a preparation, deep mining was used by the British to an unprecedented extent. Nineteen mines had been driven and charged with explosive many months before. Sappers had tunnelled deeply in the marshy ground beneath the ridge.

A violent British artillery bombardment began May 28, continuing until June 7, while British planes were also active in bombing German communications. The attack began at 3.10 a.m. of June 7 with the explosion of the mines, which changed the entire landscape, creating huge craters. Infantry with 40 tanks then advanced under machine-gun barrage. New Zealanders captured Messines at 7 a.m.; on their right



Messines. Map indicating ground taken by the British in the battle of June 7-15, 1917

the 3rd Australian div. (Monash) reached its objective in 1 hour 40 mins. Wyttschaete fell next: and by 10 a.m. the German front line had been taken. In the afternoon the attack on the second line began. Oosttaverne fell after half an hour. By 8 p.m. the German trench system N. and S. of that village was in British hands.

Two German counter-attacks next day were easily repulsed, and the British advance continued for some days, aided by German withdrawals from their positions W. of the Lys (see map). British losses in the battle were 25,000. German losses were far greater, and included 7,200 taken prisoner.

The ridge was held by the British until April 12, 1918, when during the second great German offensive of that spring, they were forced to abandon all the gains of 1917; but was retaken Sept. 30, by the 2nd army in its successful advance during the battle of Flanders. A memorial erected on the ridge commemorates 839 New Zealand soldiers whose graves are unknown. See Ypres Battles.

**Message** (Anglo-Fr. *message*, conn. with *maison*, house). In

Born June 12, 1865, he was educated at Aberdeen university and Balliol College, Oxford. Entering the Indian civil service in 1883, he held important posts in the United Provinces, and after acting as secretary to the financial department of the government of India, returned to the United Provinces as lieutenant-gov. in 1912. He resigned on appointment as finance member of the viceroy's executive council in 1918. Meston, a strong Liberal, was influential in shaping the Montagu-Chelmsford reforms. On his retirement in 1919, he was raised to the peerage. He published *Nationhood for India* in 1931. He died Oct. 7, 1943, and was succeeded by his son Dougall (b. 1894), barrister and authority on town and country planning.

**Mestre**. Town of Italy, in the prov. of Venice. It stands on a lagoon, 6 m. by rly. N.W. of Venice, and has a long viaduct over which trains from that city pass. It is an important junction for Vienna, Gorizia, Trieste, and San Giuliano. It has foundries and sawmills. Pop. 11,750.

**Mestrovic**, IVAN (b. 1883). Yugoslav sculptor. Born at Otavice, Dalmatia, Aug. 15, 1883, he

was a shepherd boy who showed a talent for carving. Having been apprenticed to a master mason at Split (Spalato), he later studied at the academy in Vienna. He exhibited there from 1902 and in European capitals from 1907, showing 26 pieces of sculpture at Venice in 1914. After the First Great War he lived at Zagreb, where in 1922 he became rector of the academy. In the forefront of expression of the Slav spirit, his work may be divided into three stylistic periods: early compositions; inspiration derived from archaic Greece, 1907-14; and a phase which showed Byzantine and Cinquecento influences. Although wood was his favourite medium, he used marble, stone, and granite. His chief works include the memorial chapel at Dubrovnik (Ragusa), and a memorial to an unknown soldier at Belgrade. He is represented in European and American galleries. See Art illus. p. 664.

**Mestizo** (Sp. from Lat. *mixtus*, mixed). Half-breed, especially the offspring, and their descendants, of a Spaniard or Portuguese and an American Indian. The feminine is *mestiza*. The term preferred in Brazil is *Mamaluco*; in the central American republics it is *Ladino*. See Gauchos.

**Meston**, JAMES SCORGIE MESTON, 1ST BARON (1865-1943). British administrator.

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Ivan Mestrovic, Yugoslav sculptor

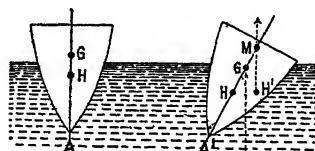
**Meta**. River and territory (intendency) of Colombia, central America. The river is the chief tributary of the Orinoco. Rising in the Eastern Cordillera, about 40 m. S. of Bogotá, and flowing N.E., it joins the Orinoco after a course of 650 m. From Calabozo it forms the boundary between Colombia and Venezuela. It contains many islands, and is navigable by small steamers at high water for about a third of its course. Meta intendancy is not yet thoroughly organized politically. The chief town is Villavicencio, situated S.E. of Bogotá. Area, 32,916 sq. m. Pop. 51,674.

**Metabolism** (Gr. *metabole*, a change). Term embracing all the chemical changes which occur in living tissues. It is divided into anabolism, the building up of tissues from simpler substances, and catabolism, the breaking down of tissues into simpler bodies. In the ordinary healthy individual who is not gaining weight, anabolism and catabolism just balance each other, i.e. the intake of food and oxygen employed in constructive processes neutralise the destructive processes which yield the waste products thrown out of the body in the excreta and from the skin and lungs. In the growing child anabolism exceeds catabolism, and in wasting

diseases or old age catabolism is in excess. See Anabolism; Life.

**Metacarpus.** The five bones of the hand, which articulate above with the bones of the wrist and below with the fingers and thumb. They are arranged so as to form a shallow arch with the cavity forwards. At their upper extremities, the metacarpal bones terminate in expanded articular surfaces, and at their lower ends in rounded heads, which articulate with corresponding depressions at the upper end of the phalanges of the fingers. See Anatomy; Carpus.

**Metacentre.** Point of intersection of the vertical through the centre of buoyancy of a floating



Metacentre. Diagram showing the metacentre (M) and centre of buoyancy (H) of a floating body. See text

body with the vertical through the new centre of buoyancy when the body is slightly displaced. If, in the figures, G is the centre of gravity of a floating body, and H the centre of gravity of the displaced water, the two points G and H, if the floating body is in equilibrium, must be above one another. If the body is tilted, then the centre of gravity of the displaced liquid is no longer at H but at some point H'. The point M where the vertical through H' cuts the old vertical through H is the metacentre. If this point is above the centre of gravity of the body, the floating body is in stable equilibrium, the forces acting on it tending to bring it back to its original position.

If, however, M falls below the centre of gravity of the floating body, the equilibrium is unstable. The higher the metacentre, the more stable is the equilibrium. This principle is of great importance in designing ships, which are ballasted so as to keep the centre of gravity well below the metacentre. In complicated structures, e.g. a battleship with heavy gun turrets, the calculations of the positions of the metacentre occupy weeks or months.

**Metadyne.** A special form of direct current generator or dynamo. It is provided with a second set of brushes operating on a different part of the commutator. By varying the method of connexion and the design of the field magnet

windings, it can be made to act as a constant-current D.C. transformer of variable ratio, or a power amplifier to enable weak "signal" currents to cause very large variations (up to 10,000 times the power) in other circuits. A special form is known as an amplidyne. The metadyne has wide application to traction control in place of plain resistance control, giving faster and smoother acceleration, and allowing power to be fed back to the line when a train is slowing.

**Metal** (Gr. *metallon*, mine). Any one of the metallic elements: Brass and many other alloys are metals in the commercial sense. The elements are broadly divided into two main classes, the metals and the non-metals, but there is a group of elements which sometimes appear to be metals and sometimes not; these are known as semi-metals or metalloids (*q.v.*). Philosophers throughout the ages have attempted to give complete and accurate descriptions of the metallic group of natural elements. Perhaps the earliest clear definition was given by the Latin writer, who adopted the name Geber; he said, "Metallum est corpus miscibile, fusibile, et sub malleo ex omni dimensione extendibile." This description covers all the metals, even including mercury, which behaves like any other metal when frozen, although in Gebers' time it was not regarded as a metal.

Blumenbach, at the beginning of the 19th century, said that "in strictness, metals should be arranged among combustible fossils" [with sulphur, graphite, bitumen, and diamond]. "They are distinguished however by the following properties. . . . They are the heaviest objects in nature and the most perfectly opaque of all the fossils; they all have the lustre, from that circumstance called metallic; their fracture is generally uneven; and many of them possess ductility. . . . They are rendered fluid by caloric, i.e. they melt. . . . With one or two exceptions. . . all are soluble in nitric or muriatic or nitro-muriatic acids and are most perfect conductors of electricity." Apart from the inaccuracy of the first statement—metals range from iridium and osmium with specific gravities of more than 22 to lithium, which is little more than half as heavy as water—the description is as complete and true as those suggested by later authors. Only a mathematical physicist can give a more precise definition of a metal; he regards metals as an array of positive ions held to-

gether by the attraction of the intervening valency electrons, a conception of the metallic linkage due to Pauling.

Metals themselves differ widely in properties, an example being the range of temps. over which their melting points are spread, from mercury at  $-38.5^{\circ}\text{C.}$  to rhenium at more than  $3,000^{\circ}\text{C.}$  Broadly they may be divided into noble and base metals, the former being resistant to corrosion and to some extent to erosion. In this group are gold, iridium, osmium, palladium, platinum, rhodium, ruthenium, and silver. Division of the base metals may be made into the light metals, aluminium and magnesium; the common metals, iron, copper, zinc, lead, tin, nickel, chromium, tungsten, manganese, vanadium, cobalt, molybdenum, cadmium, and titanium; the liquid metal, mercury; the alkali metals, calcium, strontium, barium, lithium, sodium, potassium, rubidium, and caesium; the semi-metals, arsenic, antimony, bismuth, silicon, selenium, and tellurium; the radioactive metals, radium, thorium, and uranium; and the rare metals, beryllium, cerium, columbium or niobium, dysprosium, erbium, europium, gadolinium, gallium, germanium, hafnium, indium, lanthanum, neodymium, praseodymium, rhenium, samarium, scandium, tantalum, terbium, thallium, thulium, ytterbium, yttrium, and zirconium. Each of these 66 metals is described separately in this encyclopedia. See also Alloy; Metallurgy.

**Metaldehyde.**  $\text{C}_2\text{H}_4\text{O}_3$ . White crystalline compound used as a solid fuel. It is produced by the polymerisation of acetaldehyde.

**Metallogenetic Epoch.** In mining geology, a period in geological time when conditions were favourable for the deposition of useful minerals. A metallogenetic epoch is often short and transitory, but may be of long duration.

Deposits formed by weathering processes and sedimentation are not confined to particular periods in the earth's history, but it is found that deposits genetically connected with igneous rocks are, like igneous activity, often associated with periods of profound disturbance affiliated with folding and mountain building. For this reason prominent metallogenetic epochs occurred in Palaeozoic, Hercynian and Tertiary times.

**Metallogenetic Province.** Term used in mining geology for an area characterised by a specific type of ore mineralisation. For



instance, the tin-tungsten fields of Malaya, Burma, Siam, S. China, and Indonesia constitute one metallogenetic province; gold, copper, and lead-zinc provinces are found in the U.S.A. and elsewhere. The mineralisation in any one province need not necessarily have been formed during one metallogenetic epoch (*q.v.*), *e.g.* there were two periods of tin mineralisation in the Nigerian province, and three in Australia.

**Metallography** (Gr. *metallon*, mine; *graphein*, to write). That branch of science which relates to the constitution and structure and their relation to the properties, of metals and alloys. Such a definition embraces micrographic and macrographic examination, X-ray diffraction, X-ray and gamma-ray radiography, electron microscopy, electron diffraction, fractography, ultra-violet light crack detection, physical testing, and thermal analysis. All have been used to enable the metallurgist to understand the behaviour of metals and alloys, and so to improve on their properties and methods of production. The metallographer, who is dependent on the metallurgical analyst for the fundamental knowledge of the composition of the metals or alloys under consideration, examines and tests metals at all stages in production, to ensure that the finished article will perform the duty for which it is designed.

Early iron-founders gained a certain amount of knowledge from the examination of the fractures of broken samples of their product.

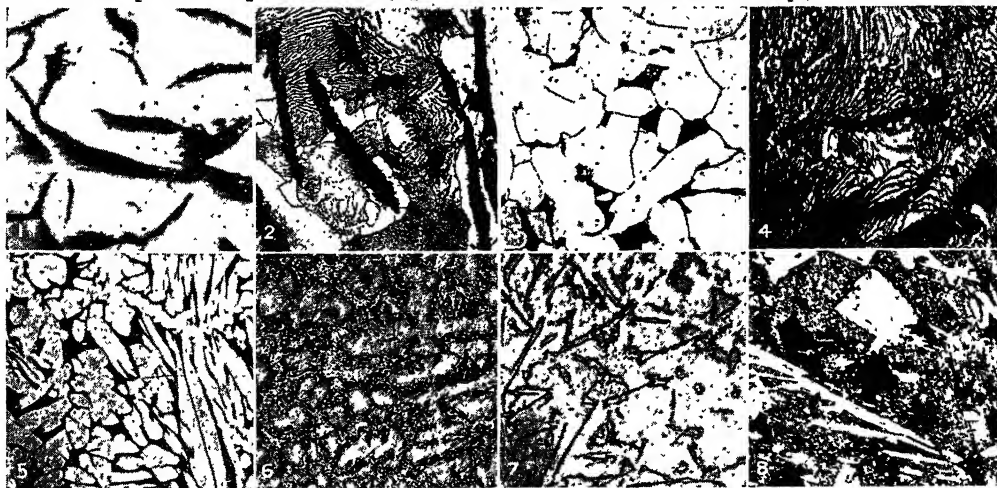
This method, though crude, and relying entirely on the experience of the men working the metal, is still to some extent in use. For example, during the refining of copper, samples of metal from the bath may be cast and broken to determine the "pitch" of the copper. When failures occur during use, the cause can often be ascertained by looking at the fracture. A natural development of this is macrographic examination. This shows mode of solidification of the metal, growth of crystals, non-uniformity of composition due to segregation, physical defects, non-metallic inclusions, method of manufacture (*e.g.* casting or forging), strain in the metal, etc.

In 1861 Henry C. Sorby of Sheffield initiated the systematic examination of metals under the microscope, and followed this by taking photographs of what he saw. Now no metallurgical laboratory can exist without a metallurgical microscope, which differs slightly from the conventional microscope used by doctors and chemists, since instead of transmitted light, it uses reflected light. As metals are opaque, a carefully polished specimen is examined under light introduced into the tube of the microscope and reflected through a right angle by a prism or thin glass slip through the objective lens, which brings it to a focus on the specimen. The light is then reflected back through the objective, this time past the prism or through the glass slip, and so to the eyepiece. Metallurgical micro-

scopes in normal use give magnifications of from 20 to 2,000 times, the higher magnifications necessitating the use of an oil immersion lens. The resolution can be improved at magnifications up to 7,000 diams. by using ultra-violet light. Photography is essential when such light is used as the eye is not sensitive to it.

The specimen is cut so that the part to be examined is reasonably level. The surface is finely ground on a series of emery papers of decreasing coarseness. The specimen is now ready for polishing, which may be carried out by hand or on a small rotating wheel on a chamois leather or cloth with suitable polishing powders. Some of the work in the latter stages can be reduced by polishing electrolytically, after grinding, by making the sample the anode of an electrolytic cell, with an acid electrolyte, often phosphoric acid.

Under the microscope the surface of the specimen will now appear smooth except where there are cracks, non-metallic inclusions, coloured constituents, blow-holes, or other defects. These should be noted before the next stage of the process, which is etching. Under this process, first the boundaries of the grains appear and then various degrees of shading in the different grains. This is because all the grains are not etched uniformly; small facets are formed and the angle of these facets, which are parallel in each individual grain, varies from grain to grain, depending on the orienta-



**Metallography.** Photomicrograph examples of iron, steel, and some alloys. (1) Grey cast iron, unetched (mag. 600). (2) The same but etched (mag. 600). (3) Mild steel with 0.2 p.c. carbon (mag. 300). (4) Pearlite in a steel, 0.85 p.c. carbon (mag. 800). (5) Alpha-beta brass; 40 p.c. zinc, 60 p.c. copper (mag. 250). (6) Bronze; 85 p.c. copper, 15 p.c. tin (mag. 250). (7) Light alloy aluminium, 12 p.c. silicon (mag. 250). (8) Bearing metal; 80 p.c. tin, 15 p.c. antimony, 4 p.c. copper (mag. 250)

tion of the grain. Thus one grain will reflect most of the light outside the microscope and so will appear dark, while its neighbour may reflect most of it back into the objective lens, thus appearing bright. Also in an alloy the various constituents may etch differently, so that they can be readily distinguished under the microscope (Figs. 1 to 8).

For lower magnifications, a macrosection can be photographed on to a fine-grained photographic emulsion, after which the portions of the photograph which are of interest are enlarged up to magnifications of c. 200 diams.

Microscopic examination is limited to the visible surface of the metal; to understand its internal structure X-rays are used, in two distinct ways. First, castings, forgings, etc., can be examined radiographically to locate inclusions, cracks, and other faults in manufacture. Greater penetration is effected by the use of gamma rays (*g.v.*). But the actual positions of the atoms themselves can be located by means of X-ray crystal analysis or diffraction.

The metallographer gains much of his important information by thermal analysis. Alloys are cooled from above their melting points to room temp., the time and temp. being accurately recorded, so that it can be plotted. If a series of alloys of two metals is treated in this way, an equilibrium or constitution diagram can be drawn,

and from this a great deal of information can be obtained. Electric furnaces and the most accurate pyrometers are used for this work in up-to-date laboratories.

Knowledge of the structure of metals has been greatly extended by the increased application of industrial X-ray technique in crystallography and for analysis and fault detection, and by the advent of the electron microscope. Behaviour of metals under working conditions can be determined by photographing by polarised light models made in transparent plastic while subjected to similar loads. The pattern and formation of the colour fringes in the resulting pictures indicate the magnitude and inclination of the stresses. This technique is known as photoelastic stress analysis. *See* Assaying; Copper; Electron Microscope; Etching (Metallurgy); Macrostructure; Microscope; Microstructure; Polishing; Pyrometer, etc.

**Metalloid** (Gr. *metallon*, mine). Term sometimes used to describe those elements which exhibit some properties of a metal and some of a non-metal. Zinc, thought by Paracelsus to be a "bastard of the metals," is now known to be a metal. The semi-metals are arsenic, antimony, bismuth, selenium, tellurium, silicon. The division is not scientific, and the description metalloid, sometimes used by chemists and metallurgists, is not generally considered desirable.

old. Copper vessels have been found in later Egyptian graves of 8000 B.C. and very well made copper basins and ewers were in use in the Egypt of 5500 B.C.

It is likely that the order of discovery of metals was different in different regions. The metals which occur native—gold, silver, copper, iron—are very irregular in their occurrence. Native copper occurs in appreciable amounts in the Lake Superior district of N. America, in Chile, parts of China, Bolivia, Australia, and in Cornwall, England. Silver is associated with the gold. Iron occurs native as meteorites chiefly in N. and S. America, while there is an occurrence of iron of telluric origin in Greenland. But the discovery of the native metals must have affected the Stone Age culture only slightly and no big change would be felt until the art of extracting metals from their ores, melting and casting them was discovered.

#### Origin of Smelting

It is thought that the original smelting operation was the accidental reduction of a mineral-bearing stone, which happened to be used as part of a ring of stones surrounding a camp fire. A piece of copper carbonate, brown iron ore, or tin stone being heated and reduced in the fire embers would produce a small lump of metal. It would be a relatively simple step to make an open furnace for the express purpose of producing what must have seemed a very desirable material to the man who, until then, had had nothing but stone to work with. Bronze was probably produced accidentally in this way, owing to the close association of copper and tin ores, and this started the great Bronze Age, which is thought to have begun in Europe and Egypt about 2000 B.C. The first simple furnace would be just a fire with a small cavity in the hearth of the fire to receive the molten metal. Such crude furnaces were still in use in Japan at the end of the 19th century and may still be seen in parts of Africa.

Iron was probably used from very early times; owing to its rapid corrosion, however, most of the evidence has been destroyed by the action of the elements. But it is unlikely that the Egyptians could have shaped the stones for the pyramids without the use of iron tools, and it is probable that the Bronze and Iron Ages overlapped. Early iron was not cast, as furnaces which would attain the high temps. needed were not available, but was wrought, by heating

## METALLURGY: WORKING OF METALS

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*The history of metallurgy, and some general account of the methods used from time to time in the extraction of metals from their ores, are given here. For specific details, see under the various metals, Copper; Gold; Iron, etc. See also Blast Furnace; Cyanide Process; Ferro-Alloys; Flotation; Mineral Dressing; Powder Metallurgy*

John Percy, professor of metallurgy (Gr. *metallon*, mine, *ergos*, worker) at the royal school of Mines in the middle of the 19th century, described metallurgy as "the art of extracting metals from their ores and adapting them to various processes of manufacture." His definition is true today, although the scope of the metallurgist's activities has widened enormously since that time until today it is almost impossible to name an article during the manufacture of which some metal-containing implement has not been used.

The art of metallurgy has been practised by man from his earliest days. The only source of knowledge of early metallurgy, however,

is the objects and articles brought to light by the excavations of archaeologists. Gold was almost without doubt the first metal to be discovered and used, chiefly as an ornament. It is probable that late Neolithic man discovered metals and so became the first metallurgist. Evidence has been found that indicates the existence of the art at least 10,000 years ago. Probably the oldest surviving product of the metallurgist's art is an old copper pin, now in the British museum, and probably used for the fastening of a goatskin over the shoulders of its owner. This, found in one of the oldest of the Egyptian graves, is probably more than 10,000 years

the ore with a reducing agent and then hammering out the pieces of slag. Chance conditions may allow steels to be produced in this way, and that this did in fact happen is indicated by Homer's mention of the process of tempering and by the existence of the beautiful Damascus blades which were made before the time of Diocletian, c. 300 A.D., of steel whose quality is scarcely equalled even today. There are some indications that iron may have been cast as much as 2,500 years ago.

The Greeks and Romans were great metal workers, using gold, silver, copper, iron, and lead with considerable metallurgical knowledge and a very high degree of manipulative skill. The Greeks developed the ingenious *cire perdue* (lost wax) process for casting their hollow bronze statues. Probably at no time in history have the arts of sculptor and metallurgist been so happily blended. From the beginning of the Christian era until about 1800 chief developments related to improvements in the methods of producing iron and steel and increased scale of operations. Among the great names of the 19th century are Dud Dudley, Huntsman, Darby, Cort, Neilson, Bessemer, Siemens, Thomas and Gilchrist, Bell, Hadfield, and Harvey. More recently, particularly since 1900, rapid advance has been made in the production and use of non-ferrous metals, the discovery and isolation of new metals, the introduction of light alloys, etc.

Contemporary metallurgical industry may be divided into two main branches, mining and extraction metallurgy, and physical metallurgy; each of these is again divided into the non-ferrous and ferrous industries, and all fields involve both plant operation and laboratory work. The various subjects overlap, the extraction metallurgist trying to produce the metal in the form most acceptable to the physical metallurgist, and the latter putting the findings of his research at the disposal of the extraction expert. Nevertheless, although each is dependent on the other, there is, owing to over-specialisation, a tendency for each branch to overlook the findings and desires of the other. In highly industrialised Great Britain, there is a natural tendency to concentrate more on physical metallurgy, dealing with the properties and processing of metals and alloys in the later stages of production, except so far as iron and steel are concerned. This is because she

has few natural ores available, most even of her iron ore being imported. In spite of this, very many of the extraction industries in the Commonwealth and Empire and elsewhere have been developed and are supervised by metallurgists from Great Britain, who have a reputation still to be equalled.

The metallurgist's work starts before the ore has been mined, for, once an ore deposit has been located by the geologist, the metallurgist plans how the ore can most economically be treated for recovery of the metals. Many ores are not of a sufficiently high grade to be smelted direct; or they contain some impurity which must be removed before the ore can be treated. This need for the ore to be treated direct led to the industry known as ore dressing. At one time this consisted almost entirely of crushing the ore to a sufficiently fine grade to make possible the separation of the metallic particles by gravity or the picking out by hand of the richly mineralised portions of the ore as they came up from the mine. Such methods are still used for ore concentration, and various shaking tables, jigs, and strikes have been designed, the principal metal to be extracted in this way being gold. This metal occurs native in ores and, being heavy, is easily separated, the gold that is left after gravity treatment being subsequently extracted by cyanidation. By means of flotation many ores previously considered too poor in quality to be worth handling can now be used.

#### Methods of Extraction

Methods used for extracting the non-ferrous metals depend upon the chemical properties of the metals and upon their mode of occurrence in the ore. Smelting is commonly employed for the extraction of lead, tin, copper, and nickel, although the metal produced very often needs further refining before it can be used industrially. Final refining may be carried out by fire methods, similar to the extraction process, or else by electrolysis. Gold and silver also can be refined electrolytically, although they and the platinum metals can be purified by chemical treatment. Electrolysis is used in the extraction of aluminium and magnesium, and of various of the less known metals such as lithium, calcium, sodium, and potassium; but the methods used are really a combination of thermal and electrolytic processes, the electrolysis being carried out in a molten bath of various salts of

the metal concerned. Distillation is used for certain metals, notably zinc, cadmium, mercury, arsenic, and antimony. Nickel, after a preliminary extraction by smelting to a matte, containing its sulphide in association with that of copper, can be refined electrolytically or by a famous process evolved by Mond, in which the nickel is volatilised as a carbonyl. Vacuum distillation is being developed for the recovery of a number of the rarer metals, such as beryllium, barium, niobium, cerium, germanium, indium, tantalum, and zirconium, previously unobtainable in a pure form.

#### Ferrous Metallurgy

Ferrous metallurgy is concerned entirely with the production of iron and steel and the allied metals manganese, chromium, tungsten, molybdenum, and vanadium. Iron ores are treated, usually without concentration, by direct smelting with suitable fluxes in a blast furnace. These run continuously for months on end, producing thousands of tons of pig iron for each campaign. The pig iron is far too brittle for use as it is and it is made either into cast iron by melting in a cupola or else into steel. Steel can be made in converters by the process of Henry Bessemer, in open hearth furnaces by the processes of Siemens and of Thomas and Gilchrist, or in electric arc furnaces, usually of the Heroult type. By suitable control of composition and heat treatment, steels can be made with widely differing properties, and the other ferrous metals are used for making alloy steels for special purposes. These metals are usually added in the form of their ferro-alloys; they are manufactured either in electric arc furnaces or in special blast furnaces. Wrought iron can be produced direct from the ore.

The metallurgical industry in the U.K. is connected chiefly with the manufacture and the working of metals and alloys. Non-ferrous and iron foundries exist in all parts of the country and certain areas are associated with the production of tubes by extrusion and rolling, sheet and strip by rolling, wire-drawing, rail-making, all forms of casting and forging. Tinplate is produced in S. Wales, where the continuous strip mill is of increasing importance, and all forms of iron and steel are produced in the Midlands and N. of England and in Scotland. Aluminium and magnesium are not only extracted from raw materials, but their alloys have been developed and manufac-

tured widely, in particular in connexion with the aircraft industry. Copper is drawn into wire and cable for the electrical industry and also alloyed with zinc and tin to make brasses and bronzes. Lead and tin alloys are made into bearings, and considerable quantities of gold, silver, and the platinum metals are refined and made into jewelry, scientific instruments, and apparatus, and into coinage at the royal mint. The shipbuilding industry uses nearly every branch of the metallurgical industry, but particularly steel. There are also a number of small specialised industries which involve careful and accurate control, such as the manufacture of springs, bearings, and tools. Many of the last-named are now made from tungsten carbide by one of the many processes used in powder metallurgy. Here the metal is obtained in powder form and compacted into the shape desired, a sintering process producing a homogeneous solid which has never been melted.

All these processes require much control and development. Control is effected chiefly by the industries themselves, which contain individual laboratories for routine testing and metallurgical analysis. Many industrial concerns also run research laboratories, which are chiefly engaged on development of methods of metal treatment. Metallurgical research uses not only the more common forms of mechanical testing, microscopy, and analysis, but also the spectrograph, X-ray diffraction, X-ray radiography, electron microscopy, and absorptiometric and polarographic analysis. Research organizations include the British non-ferrous metals research association, the British iron and steel research association, and the British welding research association. Fundamental metallurgical research is carried out chiefly by the National Physical Laboratory, and by the metallurgy departments of the universities and technical colleges. Two qualifying societies, the Institution of Metallurgists and the Institution of Mining and Metallurgy, issue certificates to students unable to sit for degree examinations.

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**Metal Powder.** Metal prepared in powder form for certain industrial uses. Many articles needed in industry are of such intricate shape and pattern that to forge or cast them is impracticable. For this and other reasons processes have been developed for manufacturing articles from metal powders, which are pressed into shape and then sintered, so as to become solid without fusion. These powders are usually prepared by direct reduction of the metallic oxides or salts, or by various electrolysis processes, e.g. in the U.S.A. in the manufacture of copper wire for the electrical industries. The metal powder is made by electrolysis in a normal cell, at abnormally high current density. The copper so formed is spongy and, after drying, can be readily broken into small particles, which are then heated without melting and extruded direct into a continuous wire. See Powder Metallurgy.

**Metals, INSTITUTE OF.** Organization founded in 1908 to promote the science and practice of all branches of non-ferrous metallurgy, and to assist discovery and invention likely to be useful to its members and to industry in general. The institute, which is international both in membership and in activities, is governed and administered by a council, representative of the several groups in its membership. Publications include the monthly journal, metallurgical abstracts, and a series of monographs on metallurgical subjects. The h.q. is at 4, Grosvenor Gdns., London, S.W.1.

**Metal Spraying, OR METALLISATION.** Method of protecting metal parts of, e.g. bridges, ships, pylons, from corrosion by air or sea water. Certain metals, e.g. zinc, aluminium, tin, have a greater resistance to corrosion than others. Heated particles of these more resistant metals are forced by means of a compressed air pistol on to the object to be coated. The particles flatten and coalesce on hitting the surface against which they are forced, and form a thin, coherent layer. The metal is introduced into the pistol as a wire or powder, and any metal obtainable in these forms can be sprayed. The coated surface can

be left exposed or painted. Tests on the Forth bridge have shown that repainting is needed much less frequently on parts that have first been thus sprayed.

**Metamorphism** (Gr. transformation). In geology, the alteration of rocks by heat, movement or pressure, and permeating solutions within the earth's crust. The altered rocks are known as metamorphic rock. In the U.S.A. the term metamorphism is sometimes used to include rock weathering. Regional metamorphism is the alteration of rock masses over large areas during mountain building movements. In the upper crustal layers simple folding and compression occur, which promote the development of slates and, locally, phyllites: a phase known as dynamic metamorphism. At greater depth, shearing of the rocks or rock-flow becomes more prevalent, and the movement is accompanied by penetration of heat and solutions derived from still deeper zones in the crust. The combined effect is to cause recrystallisation of the rocks, and platy or elongated minerals (micas, amphiboles, etc.) develop along planes of shearing or bedding. In this way schists are formed. With further introduction of material from below, schists grade into gneisses and may eventually be so far changed as to become granite or granite-like. Stages of progressive metamorphism are termed grades, and are recognized by the formation of certain minerals—chlorite, biotite, garnet, staurolite, kyanite, sillimanite, in order of increasing intensity—in rocks which were originally shales.

Thermal or contact metamorphism is a more restricted form of rock alteration found around, and in contact with, intrusive rock masses of igneous origin. The heat from the igneous rock has caused recrystallisation of the rocks to take place in an aureole around the intrusion. Those rocks which are least altered, on the outer edge of the aureole, show only incipient growth of new minerals which can be seen as spots in rocks which have become slightly hardened by the heat. Closer to the intrusion, where the effect was greater, these spotted rocks grade into very hard, tough rocks known as hornfelses. Metamorphism of lime-rich rocks leads to the development of marbles or of calc-silicate hornfelses. Alteration of basic lava flows and tuffs produces hornblende and garnet bearing rocks (amphibolites). Eco-

nomie ore deposits of copper, lead, zinc, iron, etc. are often associated with thermal metamorphism, especially when the country rock is limestone. See *Geology*; *Rocks*. Consult *Metamorphism*, A. Harker, 1932.

**Metamorphōses** (Gr., Lat., transformations). Name of two Latin works. The first, written in Latin hexameters, by Ovid, contains examples of legends and myths, from the earliest times down to the reign of Augustus, which are connected with changes of shape. The second, by Apuleius of Madaura, better known as the Golden Ass, is in prose, and gives an account of the transformation of a certain Lucius into an ass, his various adventures, and restoration to human shape. See *Ovid*.

**Metamorphosis.** Zoological term which refers to any major change in the form of an animal during its development. Many insects, crustaceans, molluscs, and sea urchins exhibit the phenomenon. An insect such as a butterfly hatches from the egg as a caterpillar which, on becoming fully grown, passes through a quiescent pupal or chrysalis stage to become a typical winged butterfly. Many molluscs have a larval form, free swimming in the sea, which metamorphoses to become an adult crawling on the sea bottom or burrowing in mud. Among the vertebrates the frog provides a familiar example. The change of form from a tadpole to a frog is brought about by a hormone secretion from the thyroid gland

which increases in size until sufficient to initiate the metamorphosis. The change of form in insects is also thought to be controlled by a hormone secretion. See *Insect*; *Larva*.

**Metaphase.** Cytological term for the stage in nuclear division when the chromosomes are arranged at the equator of the nuclear spindle but their longitudinal halves have not yet started to separate to the poles. The chromosomes are usually well spread out across the cell at this stage; hence an end-on view is usually chosen for chromosome counts.

**Metaphor** (Gr. *metaphora*, transference). Figure of speech. A term is used in a connexion where it cannot apply literally, but only by virtue of some analogy. It differs from simile in that no comparison is expressed. To say that a man is as steady as a rock is simile; to speak of the bedrock of his character is metaphor, the two being identified, not compared. Images which are constantly used lose their metaphoric force and often pass into common speech as terminology for mental states and abstract ideas; words like enlighten and revolution (political) began as metaphors. There is a stage at which the metaphor is partially accepted in this class, and here one should beware of mixing metaphors with ludicrous effect, as when politicians talk of ironing out a bottleneck. Hamlet's famous "take arms against a sea of troubles" is clearly understood, yet a mixed metaphor.

a Greek phrase meaning "the things that come after (*meta*) the physics," and was attached to certain compositions of Aristotle more than two centuries after his death (322 B.C.), either because his editor placed them after the writings called "the Physics," or because he considered they should be studied only after the Physics had been mastered. The origin of the name thus gives no information about the nature of the subject so named. Aristotle himself referred to it only as First Philosophy or Theology. The aim of this science, which has the most general of all possible subject-matters, is, he says, the study of Being *qua* Being, or of that which is, in so far as it is. Each "departmental" science may be differentiated, classified, and described by reference to the objects or field of subject-matter special and proper to it, the nature of its appropriate data determining the extent and the character of that science. Thus, spatial magnitudes and shapes together constitute the subject-matter of geometry, the geometer being concerned with no other characteristics of "what is."

Again, those characteristics and modes of behaviour and change of many physical existences on account of which we name them plants or vegetable organisms form the special subject-matter studied by the botanist. In like manner metaphysics has its special and proper domain, for it directly and exclusively treats of that which is most general and most ultimate in all things or realities whatever (namely, that they are, or are beings or existences). As the science of Being as such, its subject-matter is more universal than that of any "departmental" science.

The first task of "First Philosophy" is to elicit the irreducibly different kinds of the real about which there can be discourse and knowledge. Of these modes of being (named substance, quality, magnitude, relation, etc.), the most ultimate is substance; hence the main investigation is concerned with its analysis and its causes. Two quite different questions may be raised about any substance (*i.e.* any concrete individual thing): What are the factors composing it? How did the individual so composed come to exist and to exhibit the nature and behaviour characteristic of it?

In answering, Aristotle employs two very pervasive antitheses, manifest throughout nature; namely, (1) form and matter; (2) potentiality and actuality. In every individual, two composing factors

## METAPHYSICS: THE SCIENCE OF BEING

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*This article is one of a group that includes Logic; Philosophy; Relativity. See also Idealism; Mind; Ontology, etc.; and biographies of the great metaphysicians, e.g. Aristotle; Berkeley; Hegel; Kant; Locke; Plato; Spinoza, and others*

The name metaphysics, like the names of other sciences, is used to designate both a range of inquiries or problems and a body of conclusions which compose, at least tentatively, the sum of knowledge about the field of objects upon which those inquiries bear. In current popular usage the name carries only a vague, indeterminate signification; its scope and its aim are often not distinguished from those of philosophy. But the history of these subjects justifies, and our convenience in their pursuit favours, our distinguishing them. To try to establish a hard and fast division between them would raise endless controversy, but we may begin by regarding the scope of

philosophy as the wider, since it includes problems and doctrines pertaining to ethics and aesthetics, and these are not usually held to fall within metaphysics. Yet they have metaphysical implications, and the treatment of these inevitably leads, in proportion to its exhaustiveness, to a study of questions and principles that are metaphysical.

Provisionally defining metaphysics as the systematic study of the ultimate nature of all that is real, we may best elicit the special character of the science from (1) its earlier history: (2) its modern and contemporary position.

**ARISTOTELIAN METAPHYSICS.** The word metaphysics comes from



are united ; its matter (the stuff, or that of which it is constituted or made) and its form (that unity of structure and quality that is special to it, differentiating it from individuals of all other kinds). Every substance is thus an instance of some determinate form informing or organizing some matter. The two are inseparably united, but distinguishable, in the thing. They are also correlative, for that in the substance which is called its matter is so called only relatively to the form by which it receives further determination. By means of the second antithesis Aristotle passes from the restricted conception of the substance as constituted at one particular moment in its existence, and accounts for the course of its changes, growth, or development throughout its whole history—from an immature or less perfect condition to one mature or more perfect.

#### Aristotle's Four Causes

Both antithetical principles are brought together in his doctrine of the four causes. These are intended to explain at once both constitution and development respecting any substance, by indicating that from which it becomes, the law of its growth, the agency to which its changes are due, and the "mature" or approximately perfect character which the developing individual finally realizes, and after which it merely degenerates. Every natural process reaches a stage in which the form (which at first was only potentially present in the substance, or in the agent working upon it) is fully actualised in the matter within which that process was initiated. All varieties of process (generation and corruption, qualitative alteration, quantitative increase and decrease, locomotion) converge to promote eventually the same result: the production of fresh form in matter previously otherwise formed. The world process is continuous and eternal, and Aristotle's account of its unchanging source culminates in his Theology.

Inquiries of this character, however, originated not with Aristotle, but with the Pythagoreans and Parmenides, some century and a half earlier. Plato, too, though largely occupied with ethical and social problems, found himself also compelled to treat these more ultimate questions on which the rest of his philosophy depends. His theory of ideas (also called universals and forms) is pure metaphysics, even though he never applies that name to it. For it is these ideas or forms in their hierarchical order which

constitute the real in its ultimacy and perfection, and not the particular things in the temporal world apprehended in sense-perception.

MODERN AND CONTEMPORARY METAPHYSICS. Subsequent history of philosophy to our own times reveals an almost unbroken continuity and pertinacity in the study of these ultimate problems. After Plato and Aristotle, the greatest names are Plotinus, Aquinas, Spinoza, and Hegel ; while somewhat less in intrinsic importance if not in influence were Descartes, Malebranche, and Leibniz. Locke, and more so Kant, approached these questions from a new angle. They insisted on the priority of problems concerning the limits of possible knowledge over those about the ultimate character of reality.

Kant considered his discovery of the conditions under which knowledge was possible provided the key to all problems that could reasonably be supposed soluble. So knowledge, and not being, now becomes the primary subject-matter of metaphysics ; and epistemology (or theory of knowledge), not ontology, is conceived to be the metaphysician's proper concern. By eliciting what is implied in the very fact of our having knowledge at all, the range of problems that can legitimately be raised and profitably be treated is determined. The only knowledge possible is that which is of phenomena and their relations (i.e. appearances). Of a reality that transcends them, and of which phenomena are the appearances, our minds are permanently incapable of knowledge. So Kant holds that the attempts of previous metaphysicians to understand things as they are in themselves independently of their appearances to cognizing minds should be abandoned in favour of his philosophy, promising an understanding of phenomena.

#### Empiricism and its Opponents

From this limitation of the range of the knowable, which Hume had adopted as a convenient postulate but Kant declares to be an ineluctable necessity due to the constitution of our minds, derives much that is found in the phenomenalist, positivist, and pragmatic philosophies of the last hundred years, as well as in the anti-metaphysical programme of the contemporary "logical positivism" and "analytical empiricism" whose best known exponent in Great Britain is Bertrand Russell.

In strong reaction against what they regard as arbitrary and rationally unwarranted curtailments

of later empiricism stand such thinkers as F. H. Bradley, J. Ellis McTaggart, and H. F. Hallett. For the two former, the main issue concerns the relation of appearance, in all its forms, to reality. The different conclusion of each depends on criticism of the various characteristics that reality appears as having, from which it is sought to determine what nature and structure the existent really can have. Besides differentiating apparent characters from the ultimate characters of what exists, McTaggart tries also to show *how* the existent, having such an ultimate nature, *can* delusively appear to be so differently characterised.

Hallett, regarding all forms of empirical philosophy as "phenomenology masquerading as metaphysics," defines the latter as "the science of the eternal Real as it is in and to itself," and phenomenology as "the science of the appearances of the Real in and to its own parts." Phenomenology is a form of philosophy natural to the special scientist, and in so far as it is coherent it is justifiable as an approximation to the truth. But it is always subject to more ultimate metaphysical criticism. In particular, Hallett believes, it is the acceptance of time or duration at its face value—as being an ultimate fact or character of the real, instead of the uncriticised empirical datum that it is—which condemns all empirical philosophies to metaphysical inadequacy.

#### UNITY AND PLURALITY.

The character of metaphysics may be further understood by reviewing the solutions that have been proposed to one of its central problems. The whole truth about what exists cannot consist in the single truism that it exists. It should be possible to pass to further truths about its ultimate form, so discovering what kinds of unity render it orderly and coherent, hence amenable to our understandings. Now the limited range of the real to which we have access in perception exhibits at least an apparent plurality. The universe comes to be conceived in consequence as being really a "many," in (a) being qualified by a vast variety of characters ; (b) comprising innumerable distinct existences. Is the universe *really* a "many" in both these respects, independently of the appearances of its parts to particular minds, or is it not ?

That reality is of the same ultimate nature throughout is the answer of monism ; that there are two irreducibly different natures,



one possessed by some, the other by other existences, is the answer of dualism. Examples of the former are the materialism of Hobbes, the spiritualism of Berkeley, and the monadism of Leibniz. Descartes, affirming the ultimacy and the irreducibility of mind and matter, illustrates the dualistic answer.

The solution to the question in the second respect turns upon what dependency and what independency there is respecting the parts of what exists and the whole they together make up. One answer is that there is no dependency whatever, each existing thing or part being autonomous, depending on no other to be what it is. On this view, all relations between terms are extrinsic or external to them, and the world, in consequence, is simply a series or assemblage of particulars, some co-existent, others sequent in time. Such a pluralistic answer was returned by Hume. Another answer runs that what exists comprises (1) innumerable finite existences, each depending upon some other for its being; (2) that which depends upon nothing else, but is independently existent. Spinoza's metaphysic of a single infinite Substance, uncreated and uncaused, of which all particular things are parts or "modes," is an example. It is monistic in respect of existence, but pluralistic in respect of ultimate nature (or essence), since every part or mode is at once both physical and mental; and these natures are not merely apparent, but also ultimate expressions of the real. Conversely Leibnizian monadism is pluralistic in the former respect, and monistic in the latter, since it maintains that reality comprises an infinitely large number of existences each independent of any other. No two, however, have exactly the same nature, but the natures of them all are differentiations of one ultimate "kind," namely, spiritual or conscious activity.

Interpretations tending towards conclusions of each type, monistic and pluralistic, have their particular merits and their special dangers. Unpractised and uncritical thinking usually adheres to an elementary form of dualism, supposing some existences to be ultimately mental (minds or selves) and others to be really physical (our own bodies or non-human bodies). But the easy credibility of this view is compromised when the dualist is required to explain the apparent interaction between our bodies and our minds. So, in pursuing one prob-

lem, fresh problems are found to arise. Similarly, an over-hasty decision upon one problem, taken in isolation from others which, though really connected with it, have yet not been considered along with it, may prejudice our findings upon those others.

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**Metapontum.** Ancient Greek city in Italy. It stood on the Gulf of Taranto at the mouth of the river Basento. Founded by colonists from Achaea about 700 B.C., it was famous as the home of the philosophical school of Pythagoras after its removal from Crotona.

**Metascope.** An infra-red ray device developed by the Allies in the Second Great War to assist or detect troop movements at night. An infra-red source projected a light beam which could be picked up visually only by the metascope. It was used extensively by parachute troops to guide them to the assembly point after landing. The metascope could itself project infra-red rays which, striking an object invisible to normal vision, were reflected back to the instrument. See Infra-red Radiation.

**Metasomatism.** Chemical process operating in rocks and mineral deposits whereby the original mineral composition is changed by the action of circulating solutions. In nature solid minerals are continually being acted upon by solutions. These solutions may be of meteoric origin (see Meteoric Waters), such as rain water, and penetrate to some distance below the surface. Or hot solutions which are of deep-seated origin may ascend and flow along fissures and soak into the adjoining rock. Minerals are attacked to various degrees by these solutions, being decomposed or dissolved. New minerals may be deposited in the open spaces. If the attacking solutions are moving along minute openings, and deposition of new material keeps pace with the solution of the old, then new minerals may grow by replacement and frequently retain the structure of the original rock.

Whole ranges of granite hills have been formed by the metasomatism of sedimentary rocks by "granitising solutions"; quartz, feldspar, and mica growing by replacement of the original clays,

mudstones, quartzites, schist, etc. Metallic ores are often formed by replacement. Massive deposits of lead and zinc sulphides have been put down in place of dolomites and limestones. Tourmaline, mica, chlorite, and quartz may grow by replacement in the wall rock. The development of sericite is a common type of wall rock alteration.

**Metastasio, PIETRO** (1698-1782). Italian poet and dramatist. Born at Assisi, Jan. 13, 1698, he was the son of a Neapolitan druggist whose surname was Trapassi. Pietro was discovered as a brilliant improvisator by a wealthy man who greised his name into the form by which it is known, and in 1718 left him a fortune. This he soon dissipated, and then articulated himself to a lawyer in Naples. In 1721 he wrote a masque, Gardens of the Hesperides. Dido Abandoned, 1724, was more successful. In 1729 he was appointed court poet at Vienna. He had written 28 grand operas besides many shorter pieces when he died April 12, 1782.

**Metatarsus.** That part of the skeleton of the foot which lies in front of the tarsus or instep bones. The metatarsal bones form the front pillar of the longitudinal arch of the foot, the back pillar being formed by the heel. Each bone has a somewhat square base attached to the tarsus, and a rounded head which in walking comes into contact with the ground at the ball of the foot. Each bone forms the basis of attachment for its corresponding toe, the phalanx of the latter articulating with the rounded end of the bones. The metatarsus arches the foot from toe to heel, and from side to side, forming the instep.

**Metatheria.** Zoological term for a sub-class comprising the Marsupials (*q.v.*), or pouched mammals, of which the kangaroo is familiar. These animals bring forth their young in a very small and rudimentary state, the later stages of development taking place in the mother's ventral pouch.

**Metaurus.** River of Umbria, Italy, the modern Metauro. Here Hasdrubal, the Carthaginian general, was defeated in 207 B.C. by the two Roman consuls Gaius Claudius Nero and M. Livius Salinator, while bringing much needed reinforcements to his brother Hannibal (*q.v.*). This was a decisive battle in the second Punic War, the Roman victory extinguishing Hannibal's last hope of overthrowing Rome.

**Metaxas, JOHN** (1871-1941). Greek statesman and soldier. Born in Ithaca, April 12, 1871, he was



John Metaxas,  
Greek statesman

educated at military schools in Greece and Germany. Commissioned in the infantry, he fought in the unsuccessful Thessalian campaign against Turkey in 1897. In 1903 he became professor at the Greek military academy; later joined the general staff, serving with distinction in the Balkan Wars of 1912-13; and in 1915 became chief of staff and King Constantine's closest military adviser. When Venizelos intervened on the Allies' side in the First Great War Metaxas resigned. He also opposed plans to establish Greece in Asia Minor before the destruction of the Ottoman empire. On the fall of Constantine, Metaxas went into exile in Italy, and in 1920 was condemned to death *in absentia* for his alleged surrender of Fort Rupel to Bulgaria in 1916. The sentence was quashed after the restoration late in 1920, and he returned to Greece, though he played no part in the Anatolian war.

After periods of office and exile, Metaxas joined the government in 1935 as minister without portfolio. On the restoration of George II, in 1936 he became premier, declared himself chief of state, and proceeded to establish a totalitarian regime, which aimed at reviving the ancient Spartan traditions of simplicity and physical fitness. His foreign policy was prudent, but while strictly neutral at the outbreak of the Second Great War, he could not organize a Turko-Balkan combination against Axis aggression. When Italy attacked Greece in Oct., 1940, Gen. Metaxas was primarily responsible for military successes in the campaigns in Albania, and was the first Allied general to defeat the Axis in Europe before he died on Jan. 29, 1941.

**Métayer System** (late Lat. *medietas*, moiety, half). System of land tenure. It is derived from a Roman custom by which certain cultivators paid to the *dominus* (landlord) a fixed proportion of the annual crop. The system is still common in Italy, France, Portugal, W. Indies, etc. In France the landlord supplies, not only the land, but also stock, implements, etc.,

while the métayer provides his own and hired labour, and the resulting profits are divided between the two. The system provoked much discussion among political economists in the early 19th century.

**Metazoa**. Zoological term. It is applied to all multicellular animals except for the sponges (parazoa), which probably have an evolutionary origin distinct from the metazoa. The metazoa may be considered as animals possessing a number of cells, each containing a single nucleus, which become specialised for the various functions of life into distinct organs, e.g. the digestive, nervous, or reproductive systems. Even the simplest metazoa possess an internal cavity lined with a special layer of cells, the endoderm. In contrast to the metazoa there are the protozoa (*q.v.*), a group of animals living as individual cells with one or many nuclei, and carrying out all normal living functions.

**Metcalf, JOHN** (1717-1810). A British road-maker. Born at Knaresborough, Yorks, Aug. 15, 1717, when six years old he lost his sight as a consequence of an attack of smallpox, and became known as Blind Jack of Knaresborough. Despite his infirmity, he took up horse-dealing, being an excellent judge of horseflesh entirely by touch. In 1765 he obtained the contract to construct a road between Minskip and Fearnby and later built a bridge at Borough-bridge. The soundness of his work led to his continuous employment as a road-maker for more than 30 years, some 180 miles of turnpike being constructed by him, chiefly in Yorkshire. In road construction and bridge building he was a chief predecessor of Telford and Macadam. He died at Follifoot, near Knaresborough, April 26, 1810.

**Metcalfe, CHARLES THEOPHILUS, BARON** (1785-1846). British administrator. Born in Calcutta, Jan. 30, 1785, he was educated at Eton, and in 1800 was appointed to a writership under the East India co. He occupied various important positions in India, and was provisionally appointed governor-general in 1835. His removal of the restrictions then imposed on the Indian press brought him into some disfavour, however, and in 1838 he retired. Governor of Jamaica from 1839 to 1842, he was appointed governor-general of Canada in 1843, but ill-health compelled his retirement in 1845, when a peerage was conferred on him. He died unmarried Sept. 5, 1846. *Consult* Life, E. Thompson, 1937.

**Metchnikov, ILYA** (1845-1916). Russian-born French biologist. Born at Ivanovka, near Kharkov, May 15, 1845, he studied at Kharkov, Giessen, Göttingen, and Munich universities. In 1870 he was appointed to the chair of zoology and comparative anatomy at Odessa, and in 1882 went to Messina where he carried out bacteriological investigations. A Darwinist, he proved by experiment the existence of general laws of evolution applying to all animal organisms, and his biological research on comparative embryology led to his formulating the important theory of phagocytosis. In 1887 he joined the Pasteur



Ilya Metchnikov,  
French biologist

institute in Paris, of which he later became assistant director, and gained a worldwide reputation by his discoveries. In 1884 he published a memoir on the intracellular digestion of invertebrates. Metchnikov achieved results of the highest importance in bringing bacteriology to the aid of therapeutics; he worked on a theory that man's life is unnaturally shortened by intestinal putrefaction, as a remedy for which he advocated the use of lactic ferments in the diet, especially sour milk. He also investigated many obscure diseases including cancer, and collaborated with Ehrlich in combating syphilis. He was awarded the Nobel prize for medicine in 1908. He died in Paris July 16, 1916. His chief works included *The Comparative Pathology of Inflammation*, 1892; *Immunity from Infectious Diseases*, 1901; *The Nature of Man*, 1903; and *The Prolongation of Life*, 1910. A Life by his wife appeared in English in 1922.

**Metellus**. Name of a plebeian family in ancient Rome, of which the most eminent members were the following. (1) Lucius Caecilius Metellus, consul 251 B.C., who inflicted a severe defeat on the Carthaginians in Sicily in the First Punic War. Subsequently he lost his eyesight in rescuing the Palladium (*q.v.*) from fire in the temple of Vesta. (2) Quintus Caecilius Metellus (d. 115 B.C.), grandson of the above, received the surname of Macedonicus in recognition of his successful campaign in Macedonia against the pretender Andriscus, whom he defeated and captured.

148 B.C. His other military successes were the defeat of the Achaeans in 146, and his campaign against the Celtiberians in Spain. (3) Quintus Caecilius Metellus (d. c. 91 B.C.), nephew of (2), received the surname of Numidicus from having commanded the Roman army against Jugurtha (q.v.). Though successful he was recalled, his legate Marius having intrigued against him. Metellus afterwards became the leader of the aristocratic party at Rome, but owing to the machinations of Marius and Saturninus he was driven into exile. (4) Quintus Caecilius Metellus (d. c. 63 B.C.) was surnamed Pius from his efforts to secure the recall from banishment of his father, Metellus Numidicus. In the civil wars between Marius and Sulla he gained some successes, but in the war in Spain proved no match for Sertorius. (5) Quintus Caecilius Metellus Pius Scipio (d. 46 B.C.) was the son of Scipio Nasica, and adopted son of (4). He was one of the generals in command of the army of Pompey at the battle of Pharsalus in 48 B.C., and after the defeat at Thapsus in 46 committed suicide.

**Metempsychosis** (Gr., transference of the soul). Philosophical term for the transmigration or passage of the souls of men from one body to another after death. As nothing can be created out of nothing, and no substance can suffer annihilation, it is held by this doctrine that when the union of soul and body is dissolved, a new sphere of action is found for the soul in other bodies, of which it becomes in succession the animating principle.

A common phase of animism among savages in many parts of the world, it was developed philosophically by many of the ancient religions. It is a fundamental doctrine of the later Brahmanism, though not in the Vedas. It was held that by successive stages a man might sink into a beast as a punishment for crime, or rise to deity by a life of virtue. Buddhism, while denying the existence of the soul, changed the idea to a belief in the transmission of *karma*, or character formed by works, from one body to another. Thus the Jatakas describe the 550 previous births of Gautama Buddha, as a slave, elephant, frog, tree, etc.

The doctrine of metempsychosis, which is more or less allied to emanation and palingenesis, spread to Greece and was developed by Pythagoras and Plato. It affected the Hebrews, was taught in certain

early Christian sects, formed a tenet of Gnosticism, and was part of the faith of the Druids. Irenaeus uses the word *metempsychosis*. Simonides, in the 7th century, adapted the theory to a satire on women which is translated in Addison's *Spectator*, No. 209.

**Meteor.** Small fragment of cosmic matter, probably in general no larger than a grain of sand, travelling through interplanetary space. Should it penetrate into sufficiently dense layers of the earth's atmosphere, the air in front of the meteor is compressed, giving rise to incandescence. In general, the luminosity appears at heights between 100 and 50 m. above the ground. Although disappearance is most frequent at a height of 50 m., occasionally meteors are still visible at levels below 30 m. The luminous track of a large meteor may persist for half an hour or even longer, and can be studied by radar methods. These "shooting stars" travel through the atmosphere with velocities ranging between 500 and 4,000 m. per minute. The appearance of the larger meteors is sometimes followed by sounds, known as "detonations," probably due to the waves created by the passage of the meteor through the air. From a detailed consideration of the physical processes involved, Lindemann and Dobson showed, in 1922, that the observation of certain characteristics, such as the points of appearance and disappearance, velocity, and brightness, provide a means of estimating the density and therefore the temp. of the air at these great heights. The theory indicated that at about the 35 m. level, the atmosphere is warmer than that close to the ground—a result which in recent years has been confirmed by the more accurate measurements which utilize sound waves from explosions. Only during the 20th century has the term meteor been restricted to shooting stars; previously it was applied to any phenomenon occurring in the atmosphere.

Meteors move in regular orbits, and are regarded hypothetically as fragments which may be the relics of a larger body, but which are in any case dispersed in a huge swarm. Such a swarm may be only a few hundred miles thick, but its length, as is shown by the example of the Leonid meteors, may amount to hundreds of millions of miles. Schiaparelli has demonstrated that the unequal attraction of the sun for the individuals of a

swarm of meteorites moving round it would scatter them along the orbit, and in time produce a more or less complete ring; if this intersects the earth's orbit an annual meteor shower results.

The great display of Leonids on November 12–13, 1833, first drew serious scientific attention to meteors, though the shower had been known for at least a thousand years, being recorded in 902. It was shown that the radiation of the paths was only apparent, and the flights of all the shooting stars were consistent with the theory that they moved in parallel round the sun. The result of the investigations by astronomers was the prediction that a particularly brilliant display would appear about every 33 or 34 years, a result confirmed in 1867.

The shower which radiates from the constellation of Perseus on Aug. 11–13 has been observed since A.D. 830, and has been shown to have an orbit identical with that of Swift's comet of 1862. The history of the Andromedids, which come from Nov. 21 to 27, is as well known as that of the Leonids; the shower of 1872 proved that the swarm was moving along the same orbit as the last comet of Biela which divided in 1846, and has not been seen since 1852.

At present there is no generally accepted theory of meteors. Not every shower can be traced to a comet, nor does every comet give rise to a meteor-shower. Some eighty showers are known, and the following is a list of the chief and their approximate dates:

Name of Shower.	Date.
Quadrantids.	January 2-3.
Lyrids.	April 20-22.
7 Aquarids.	May 1-6.
8 Aquarids.	July 28.
Perselids.	August 11-13.
Orionids.	October 21-23.
Leonids.	November 14-16.
Andromedids.	November 21-27.
Geminids.	December 10-12.

See Comet; Meteorite.

**Meteor.** Name given to a British jet-propelled fighter aeroplane. It was designed by W. G. Carter, and built by the Gloster Aircraft co. The Meteor was the only Allied jet-propelled aircraft to see operational service in the Second Great War, being especially successful against flying bombs. It set up world's speed records in 1945 (606 m.p.h.), and in 1946 (616 m.p.h.). The standard Meteor, fitted with two Rolls-Royce Derwent units each of 3,500 static thrust, and armed with four 20-mm. cannon, was capable of 595 m.p.h. at sea level, could climb to 40,000 ft. in

8 mins., and with extra tanks had a range of 820 m. The wing span, originally 43 ft., was later shortened to 37 ft. 2 ins. See Jet Propulsion of Aircraft.

**Meteor Crater.** A large basin-like depression in Arizona, U.S.A., some 4,000 ft. in diam, and 600 ft. deep. It is surrounded by a rim 150 ft. high above the surrounding plateau. Large masses of rock and fragments of meteoric iron surround the crater, which is considered to have been formed by the explosion of a large meteorite as it struck the earth's surface.

**Meteoric Waters.** Waters occurring in nature of atmospheric (meteoric) origin. They are most abundantly derived from rains, water courses, lakes, and oceans; they soak into the earth along fissures or pore-spaces in the crustal rocks. In part they are in the rocks and in part ascend to the surface again as springs, etc. During the course of their journey through rocks they may become charged with salts, of calcium, sodium, magnesium, potassium, iron, silicon, etc. These may be reprecipitated to form mineral deposits, e.g., certain sulphur, magnesite, serpentine, and hematite ore-bodies. Processes of rock weathering are the result of meteoric water action.

**Meteorite.** Metallic or stony mass of matter reaching the earth from outside the earth's atmo-

interplanetary space as a fact. The two largest known were found in S.W. Africa and in Greenland. The first still lies at Grootfontein, and weighed 60 tons; the other, 36½ tons, was transported by Commander Peary to New York.

The fall of the great meteorite in central Siberia, on the watershed of the Khushmo and Kimohn rivers, on the morning of June 30, 1908, is without parallel in historic times. The flight followed a very sloping trajectory from S.S.W. to N.N.E. through not less than 300 m. of the atmosphere. In view of the great inertia of the meteorite (according to one investigator it weighed 130 tons), the resistance of the air reduced only slightly its cosmic velocity, estimated to be of the order of 50 m. per sec. On impact the explosion threw up incandescent matter to a height of more than 12 m., producing a vertical column of fire which was observed nearly 300 m. away. Near the point of fall the coniferous forest was uprooted and burnt by the hot explosive waves over a radius of between 5 and 10 m. Air waves felled and stripped trees of branches and bark for distances up to 30 m. around. In all about 3,000 sq. m. of forest were blown down. Sensitive barographs at places as far apart as London, Zagreb (Croatia), Batavia, and Washington recorded the air

waves from the explosion. A small earthquake was produced by the impact, oscillations through the ground being registered at several seismological stations, including Jena, 3,000 m. distant. During the two nights following, brilliant sky glows were seen over northern Europe. A remarkable feature

is that for nearly 20 years no expedition sought out the place of the fall of the giant meteorite; it thus escaped the notice of the scientific world until 1930.

The large number of observed falls of meteors bears little relation to the enormous mass of meteoric matter which is reduced to vapour before it reaches the surface of the globe. A conservative estimate of the weight of the annual downfall puts it at not less than 360 tons.

Meteorites consist of iron or stone chiefly, though other elements, all of which are found on the earth, occur. From their helium content it is possible to deduce their age from the time they solidified. Ages of from 100 to 3,000 million years are thus found. It is surmised that they are fragments of larger bodies revolving round the sun, such as asteroids (*q.v.*). Occasional falls of very large meteorites have in relatively recent times produced craters from 60 to 4,000 ft. across. The largest is in Arizona. See Meteor Crater.

**Meteoric Hypothesis.** The theory suggested by Sir Norman Lockyer to account for the formation of planetary and other astronomical systems. The theory assumed that space was originally occupied by large swarms of meteors, collision between the meteors causing coalescence and giving rise to condensation of and accretion to masses of matter to form stars, etc. See The Meteoritic Hypothesis, Sir N. Lockyer, 1890.

**Meteorograph.** An instrument giving automatically a continuous record of atmospheric changes. A meteorograph devised by W. H. Dines for use in upper air investigations weighs only a few ounces and can be carried by comparatively small balloons, inflated with hydrogen, as high as the stratosphere. The registering elements are connected together to produce directly a graph of temp. related to pressure. The records are engraved on a silvered plate the size of a postage stamp and are read on descent by aid of a microscope. The use of meteorographs is becoming somewhat restricted owing to the development of radar. See Meteorology; Radio-sonde.

**Meteorological Office.** Name of the official meteorological service of the U.K. It was formed in 1854 as a department of the board of trade for the discussion of meteorological observations made at sea. In 1867 it was made a separate office, administered by a meteorological committee. Since 1919 it has been a department of the air ministry. It is responsible for meeting the meteorological requirements of the army, the R.A.F., civil aviation, other gov. depts., and the community in general, including groups, i.e. farmers, fishermen, to whom it is of first importance. It is responsible also for the organization of meteorological observations and observations of atmospheric electricity, terrestrial magnetism, and seismology



Meteorite. The Willamette meteorite, a mass of iron found in the Willamette Valley, Oregon, in 1802. It is 10 ft. long, 6 ft. 6 ins. high, and nearly 16 tons in weight. Courtesy of the American Museum of Natural History

sphere. Meteorites have been recorded from early times, e.g. by Livy, Plutarch, and Pliny. A meteor still preserved fell on Nov. 16, 1492, in Ensisheim in Alsace, weighing 260 lb. In 1794 Chladni gave scientific support to the idea that stones fell from outside the earth, but it was not until 1803 that a report by the French physicist Biot, on a fall of several thousand stones, compelled the scientific world to recognize the fall of stones on the earth from

in the U.K., for the collection and publication of meteorological information from all parts of the world, and for research in meteorological and geophysical subjects. Meteorological observations from a wide area, including ships at sea, are received almost continuously day and night at the Central Forecasting office by teleprinter and wireless. Weather charts are prepared and information on the weather situation, with forecasts and warnings, is issued at frequent intervals by teleprinter and wireless broadcasts. The office possesses a large library containing meteorological data from all parts of the world, which is available for public reference on application.

**Meteorological Society, ROYAL.** Society for the promotion of the science of meteorology. Founded in 1850 as the British Meteorological society, incorporated by royal charter in 1866, it

received its present title in 1883. In 1921 the Scottish Meteorological society, founded 1855, was amalgamated with the society. There is also a Canadian branch. Membership is composed of fellows (designated F.R.Met.S.), foreign members, associates, and student associates. Publications include the quarterly journal, *Weather*, the *Phenological Report*, and a bibliography of current meteorological literature; the monthly weather report of the Meteorological Office is available to certain classes of membership.

Among the awards of the society are the Symons memorial medal for distinguished work in connexion with meteorology and the Buchan prize for outstanding contributions to the society's publications. The society's offices are at 49, Cromwell Road, London, S.W.7; a meteorological station is maintained at 62, Camden Square, N.W.1.

## METEOROLOGY: WEATHER SCIENCE

A. J. Drummond, F.R.Met.S., Editor, *Weather*

*An account of the origins and changing methods used both for the observation of actual weather conditions and for the forecasting of future conditions. See cognate articles on e.g. Lightning; Rainfall; Temperature; Weather*

Meteorology (Gr. *metēōros*, lofty; *logos*, discourse), the science of the earth's atmosphere, is concerned primarily with the processes manifested as weather and seeks to give physical explanations of them. In its fullest sense, however, the subject embraces, in addition to the physics of weather and climate, the study of atmospheric optical and electrical phenomena and, more remotely, certain aspects of terrestrial magnetism.

From the earliest recorded times the changes taking place in the state of the atmosphere occupied man's attention and in consequence there arose the weather rules to be found in folklore. Many of these sayings can be traced back to the writings of Aristotle's pupil, Theophrastus, in the 4th century B.C. The appearance of Aristotle's *Meteorologica*, from which the name meteorology is derived, represents a great landmark in human knowledge as it is the first systematic discussion of the atmosphere and its phenomena. The Greeks made meteorological observations, especially of the winds because of their practical use in navigation. The measurement of rainfall, one of the oldest of meteorological measurements, was undertaken in India as early as 400 B.C.

The beginning of a new era in meteorology is marked by the inventions of the thermometer by Galileo in 1607, and the mercurial barometer by Torricelli in 1643. A few years after the latter event, observations on the Puy-de-Dôme showed that the barometric pressure decreases with height, and it was not long before the study of the atmosphere came to be regarded as a physical problem to be approached by the coordination of observations such as those outlined in the scheme for making a record of the weather which Hooke communicated to the Royal Society about 1670. The discovery of Boyle's law, 1662, governing the relation between the volume and the pressure of a gas, was the first step towards the understanding of the dynamics of the atmosphere. In 1700 Dampier compiled his celebrated *Discourse of Winds* in which he described with remarkable fidelity the main characteristics of the trade winds; some few years previously he recognized that typhoons were revolving storms. The Fahrenheit and Centigrade scales of temperature were introduced in the first half of the 18th century and the hair hygrometer of de Saussure and the anemometer of Woltman in the

second half. With the aid of his hygrometer, de Saussure showed that damp air is lighter than dry air at the same temp. and pressure; Dalton followed this by enunciating the laws of pressure of water vapour in the air. The aneroid barometer was invented by Vidie in 1847.

This development of instruments and the resulting observations gave rise to many important discoveries. In the age of the sailing ship the earliest endeavours to explain the circulation of the atmosphere were concentrated upon the causes of the trade-winds. These wind belts were first attributed purely to the distribution of solar radiation over the surface of the earth, but Hadley (in 1739) rightly took into account the effects of the earth's rotation on the enveloping layers of air.

### Study of Storms

The mechanism of storms and the irregular weather changes of temperate latitudes were, however, only slowly understood. The origin and behaviour of cyclones received much attention in this period, to which also belongs the introduction of the synoptic chart as a means of treating meteorological problems; although such weather maps did not come into regular use for delineating and forecasting weather conditions until after the invention of the telegraph, the earliest indications of this method date from the work of Brandes and Redfield (c. 1820).

About 1845 Maury, of the U.S. navy, published wind and ocean current charts for the use of ship masters; these charts led to a reduction in the time of the passage from England to Australia from an average of 124 days to 97 days. The U.S. government were so impressed with such practical advantages of the collection of weather observations that they called an international conference which was held at Brussels in 1853. The study by the French astronomer, Leverrier, at the instigation of Napoleon III, of the severe gale which traversed the Mediterranean in 1854 and subsequently caused much damage to the allied fleets in the Black Sea during the Crimean War, has become a classic. Leverrier collected sufficient material to make it possible to plot a series of primitive weather maps. He then found that the storm had moved along a regular path with a fairly uniform speed, and consequently suggested that if arrangements were made for the

collection, by telegraph, at a central office of weather reports from suitable observing stations, analysis of charts based upon these reports would allow the future path of the storm to be extrapolated and due warning to be given of its approach. A number of meteorological stations were established, and in the middle years of the 19th century there grew up in most countries organizations for the collection and discussion of meteorological information.

In 1858 the French government established a telegraphic weather service with its headquarters in Paris. A corresponding service was brought into operation in Great Britain two years later. The first daily weather report to be published originated in Great Britain, in 1851. A conference of leading meteorologists, representative of many countries, was held at Leipzig in 1872—the forerunner of the regular meetings of the present-day International Meteorological Organization. The I.M.O. initiates any necessary measures for the development or improvement of international meteorology; and upon its activities depends the ability of each country to obtain promptly and accurately from other countries the reports which form the nucleus of the synoptic charts, and on which weather forecasts are based.

#### Meteorological Systems

The state of the weather at a given time and place is generally specified by the values possessed by the meteorological elements, namely, air temp., humidity, pressure, wind, precipitation (rain, snow, etc.), and clouds. The standard practice of representing the weather conditions over any region consists of bringing together observations made simultaneously at a network of stations by plotting them on a map, thus affording a bird's eye view, so to speak, of the geographical distribution of the various prevailing elements.

The period following the introduction of the synoptic chart saw the recognition of definite meteorological systems, such as depressions or "lows" and anticyclones or "highs," which retain their identity perhaps for days at a time and often travel long distances carrying their characteristic distribution of wind and weather with them. In 1860 Buys-Ballot discovered his famous law which states the connexion between the wind and the pressure distribution. Seven years later

Buchan published the first charts of monthly isobars, showing how the pressure over Europe diminishes gradually from S. to N. all the year round, with permanent low pressure near Iceland, and demonstrating the effect of pressure gradient upon wind velocity. Despite the multiplication of observations, however, the chief methods of forecasting which developed were statistical and derived from past experience. Little consideration was given to physical explanations, and few attempts were made to use physical principles, *e.g.* those that govern motion and the relation between heat and motion.

#### Solar Radiation

The earth's atmosphere has been compared to a gigantic heat engine. Solar radiation passes through the atmosphere without much appreciable interference unless a cloud lies in the path of the rays, in which case they would be reflected back towards space. Radiation reaching the surface of the earth, warms it and, in turn, the layer of air close to the ground. The principle heat sources of the atmospheric engine are, therefore, to be found in the tropics and middle latitudes—over the continents in summer and over the warmer sea currents in winter. Now the energy which is retransmitted by the surface of the earth is of a much longer wavelength and cannot easily penetrate the water vapour always present in the atmosphere. In any layer the water vapour will absorb radiation coming up from the earth on the one hand, and from adjacent higher and lower layers, on the other, the intensity of the radiations depending, of course, upon the temps. of the emitting sources. At a certain height a layer would be reached where the loss of heat is greater than the gain, and it is there that the main cold source is to be located. In the cold regions the air will sink and in the heated ones it will rise; between the two regions there will be movement of air horizontally. As the atmosphere as a whole gets neither hotter nor colder, there is a balance between the heat gained and that lost. Also, it is only recently that the part played by water, in the form of clouds, in regulating the temp. at the surface has been appreciated.

At present little is known concerning the vertical distribution of water vapour in the atmosphere. When the complexity of the radiation problem is also

considered, the difficulties the meteorologist faces in attempting to locate the heat and cold sources of the air and improve his understanding of the dependent wind systems are at once apparent. The agents responsible for the exchange of cold polar air masses with the warm tropical air masses are the depressions and the anticyclones, which may be envisaged as huge turbulent eddies, or vortices with vertical axes, developed in westerly and easterly air streams. Since the middle of the 19th century it has been realized that two currents of air, differing markedly in temp. and velocity, may flow adjacently and, as one succeeds the other, produce, at a given place, distinctive sets of weather phenomena. The moving discontinuities, or boundary lines, can extend over hundreds of miles and frequently are conspicuous on a synoptic chart. Norwegian meteorologists first examined the currents scientifically in detail. It was found that normally the currents could be followed from day to day; they differed from each other in direction, speed, temp., etc., and when they met abruptly, *e.g.* when warm air is pushed up over cold air, certain weather characteristics the discontinuities. It is not, therefore, the depressions and anticyclones as such that are important in determining the weather, but rather the interactions between the various air masses involved in the wind systems. The boundary between two air masses is referred to as a frontal surface and the intersection of this surface with the ground as a front. According to this theory, depressions form initially as small waves on a frontal surface, later growing into roughly symmetrical vortices.

#### The Upper Air

Up to the last decade of the 19th century systematic meteorological observations were confined almost solely to those made at ground level. Real knowledge of the temp. of the free air dates only from 1898, when de Bort introduced his sounding balloons carrying self-registering instruments to heights which up to that time had never been attained, and about which no information was then available. The following year de Bort made the discovery that the upward decrease of temp. ( $1^{\circ}$  F. per 300 ft. approx.) ceased at a certain height; above this level the temp. was either uniform or even



increased slightly. This epoch-making revelation of the stratosphere, as the upper layer was later termed, attracted great attention to his measurements. Similar methods were adopted in other countries and an intense investigation of the upper air was inaugurated. In the new era thus opened, W. H. Dines, chiefly by his design of an extremely light and robust meteorograph, played a leading rôle in bringing Great Britain to the forefront of this work. Exploration was not restricted to organized meteorological services, and soundings were made over the oceans and tropical Africa. Moreover, most polar explorers and expeditions included this aspect among their scientific activities.

#### Charting the Stratosphere

Direct measurements made on aircraft of temp. and humidity at regular intervals of height have provided yet another means of systematic observation, and during the Second Great War Spitfires carrying out meteorological flights attained heights of some 8 m., compared with 5 m. or so of the period between the two wars. A radio technique, aimed at securing additional information about the upper atmosphere, was later adopted almost to the exclusion of all others. The radio-sonde, carried upwards by a balloon, automatically transmits, by radio, signals representative of the meteorological elements, temp., pressure, and humidity, to receiving stations on the ground. Continuous soundings to levels of 10 m. or 12 m. are frequently obtained and in the British meteorological service the upper air programme provides for radio-sonde ascents from a number of selected stations four times daily. Radar methods are also used to determine the position of the balloon carrying the transmitter, at any instant, and so give an indication of its path, from which the direction and speed of the upper winds can be deduced. With this technique it is unnecessary to await the recovery of the instrument on descent. A feature of current synoptic analysis is the construction of series of charts for the upper levels of the atmosphere; in Great Britain the practice is to draw isopleths showing the height of the surface of chosen values of pressure, e.g. 700 mb., 500 mb., etc. Thus a three-dimensional representation is obtained of the structure of the atmosphere and of the air mass movements which are taking place.

Research has shown that the tropopause—the sharp surface separating the stratosphere from the underlying region, or troposphere—over England is generally at a height of about 7 m., although occasionally it may be as high as 10 m. and as low as 4½ m. On the average, the base of the stratosphere occurs at a higher level in the tropics (10 m.) than at the poles (6 m.); and as the temp. is lower the greater the altitude at which the transition from troposphere to stratosphere takes place, the coldest-known terrestrial region is 10 m. above the equator, where a temp. of  $-130^{\circ}\text{F}$ . has been registered. At the ground the lowest temp. on record is  $-95^{\circ}\text{F}$ . (Siberia). During the Second Great War it was observed that the conspicuous condensation, or vapour, trails produced in the exhaust of a high-flying aircraft disappeared when the aircraft climbed into the stratosphere. Investigation with a specially designed hygrometer revealed that the air of the stratosphere is invariably extremely dry. Since the presence of even minute proportions of water vapour exerts an influence on temp., this discovery is of the greatest importance. It has been suggested that the source of this dry air is the cold and therefore dry equatorial stratosphere, which would indicate a world-wide circulation of air in these upper regions of the atmosphere. It is not known precisely how far the stratosphere extends upwards, but it appears from the study of the travel of sound waves in the atmosphere, by Whipple and others, that at a height of between 22 m. and 25 m. above sea level the temp. begins to increase again at about the same rate as it decreases in the troposphere; how far the rise continues is not yet certain. Temps. in this upper warm region exceed those found on the ground at the equator, and at a height of 40 m. would seem to be of the order of the boiling point of water.

#### Study of the Troposphere

In the troposphere the general surface temp. is determined chiefly by radiation, and the temp. gradient in the air by turbulence. It is in this region that the formation of cloud and rain takes place. The rate at which temp. there falls off vertically, usually referred to as the lapse rate, is far from being regular; not infrequently the decrease is interrupted by layers, several hundreds or even thousands of feet thick, in which the temp. remains constant, or even

increases with altitude. Such layers are termed inversions and are associated with stable conditions in the atmosphere. The lapse cannot exceed the adiabatic lapse rate ( $5^{\circ}\text{F}$ . per 1,000 ft.), i.e. the rate at which the temp. of a mass of dry air alters when subjected to change of level in consequence of the work done by or upon it in expanding or contracting. Any temporary increase of lapse rate beyond the adiabatic limit (e.g. by the heating of the surface layers faster than those higher up) indicates conditions of great instability, which give rise to powerful convection currents and the development of thunderstorms.

#### New Methods and Instruments

During the Second Great War the meteorologist was provided with many ingenious new instruments and techniques, a number depending upon the close association between meteorology and radio. By observing, at a wide network of sites, the bearings of atmospheric due to lightning flashes distant thunderstorms can now be detected and their movements plotted. Thunderstorms are, however, frequently associated with the cold fronts of depressions; such "static" reports will obviously form valuable supplements to the information at the disposal of the synoptic analyst. At closer ranges, the application of microwave radar principles fulfils several purposes. Wind finding balloons can be tracked with a high degree of accuracy. Cloud types can be identified and warning received of the approach of rainstorms. As the nature of the echo from a collection of water drops depends to a great extent upon the size of the drops, it is possible with a radar beam to investigate the distribution of drop size and concentration of drops in a cloud. Again, the refraction of radio waves by the atmosphere affords a means of studying the humidity gradient upon which the refractive index of the air, at radio frequencies, largely depends.

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**METEOROLOGICAL STATIONS.** Places where regular observations

of weather are made and recorded. When reports are made to a central office the observations are on a uniform plan according to a set time-table. Stations can be classified according to the character of the observations made. At the most important observatories continuous records are kept of pressure, temp., wind, rainfall, and sunshine, and frequent observation is made of cloud and other elements. A normal climatological station records pressure, temp., wind, cloud, and weather at two or more fixed hours each day, together with the daily rainfall. At auxiliary climatological stations the observations are less complete, being taken only once each day or other than at the recognized times. Telegraphic reporting stations make more detailed observations at 3-hourly intervals for use in the preparation of the synoptic charts for weather forecasting; at airfields observations are made each hour. Agricultural-meteorological stations devote special attention to earth temps. and health-resort stations make observations chiefly for publicity purposes. The bulk, however, of the 5,500 meteorological stations in the British Isles record only rainfall.

The Meteorological Office (*q.v.*) maintains observatories at Kew (Surrey), Eskdalemuir (Dumfries), Aberdeen, and Lerwick (Shetland), and also receives reports from the Royal Observatory, and the observatories at Liverpool, Southport, and Paisley. In addition it receives daily reports from the minor stations. *See Weather.*

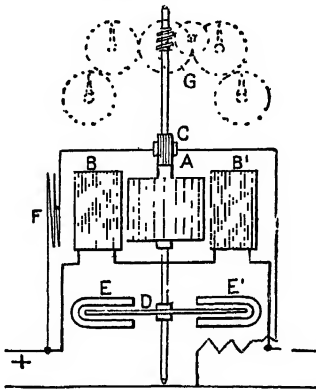
**Meter.** Instrument for measuring quantities of electric current, gas, water.

**ELECTRIC METERS.** These can be divided into three general classes: indicating; recording; integrating. Indicating meters, or indicating instruments, show the value in terms of some known unit of power of the quantity being measured at any particular moment by means of a pointer moving over a graduated scale. To this class belong the galvanometer, the voltmeter, and the ammeter (or amperemeter), the power factor indicator, which measures the difference in phase between current and voltage in an A.C. circuit, and the wattmeter which has both current and voltage coils and measures the power in a circuit by multiplying the current by the voltage (by the power factor in an A.C. circuit). The ohmmeter, by dividing volts by amps, gives direct indication of the electrical resistance of a circuit.

Recorders are indicating instruments with the pointer and scale replaced by an inked stylus or pen resting on a chart driven by clock-work so that it traces out a continuous record of the value of the quantity over a period of time.

Integrators, or energy meters, measure the total energy passed in a given time, directly in kWh. or B.o.T., units by integrating power and time, irrespective of how the power varies over the period. Integrators are of three main classes, chemical, clock, and motor.

In most energy meters a small motor (either A.C. or D.C. according to the supply), whose torque is proportional to the power in the circuit, drives an eddy current brake. This consists of an aluminium or copper disk rotating between the poles of a powerful permanent magnet, thus setting up



Meter. Fig. 1. Diagram of meter for recording electricity consumption. For explanation see text

eddy currents in the disk, and giving a braking torque which is proportional to the speed but is without friction. The speed of the motor with such a brake is directly proportional to the power in the circuit, so that the actual number of revolutions made is a measure of the energy passed, and this is ascertained by a simple counting train of gearwheels and dials which can be calibrated directly in kWh.

Fig. 1 is an elementary diagram illustrating the principles of operation in a D.C. meter. A is the armature connected as a voltage coil through the commutator C. B B' are the field magnets, connected as current coils. D is the eddy current brake disk, and E E' the brake magnets. F is a small auxiliary field coil to compensate for friction at light loads, and G is the gear train for counting the revolutions.

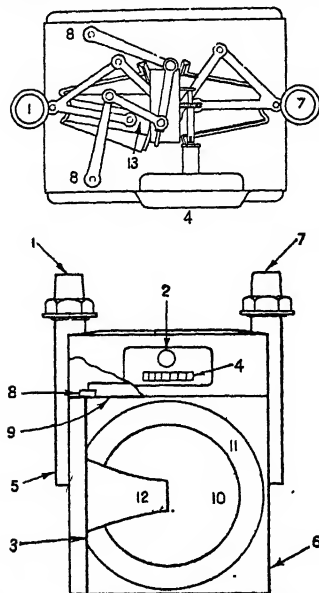
Alternating current meters are simpler in construction but more complex in action. The rotating element consists of a single disk in which both driving and braking torques are induced simultaneously, one half of the disk acting as a small induction motor under the action of current and voltage coils, and the other acting as an eddy current brake.

The prepayment meter, frequently used in residential premises, consists of a standard meter unit with an extra gear train connected to a spring-operated switch, which is closed by a loose handle or knob outside the meter. This knob can be temporarily connected to the mechanism by the insertion of a coin, which falls through into a collecting box after the knob has been rotated, and the switch closed. The action of closing the switch also sets up the gearing by a certain amount. The rotation of the meter element gradually unwinds the gearing, and opens the switch after a certain number of revolutions, unless the mechanism has been further set-up by the insertion of another coin. (*See Ammeter; Galvanometer; Ohm's Law; Voltmeter.*)

**GAS METERS.** These include positive displacement and inferential types. For use on consumers' premises a meter must satisfy requirements of Gas Works Clauses Act and Sale of Gas Act, under which it is a statutory obligation to supply gas by meter. Meters in use, which must be accurate within the limits 2 p.c. fast (in favour of supplier) and 3 p.c. slow (in favour of the consumer), are of the dry or bellows type, to the Institution of Gas Engineers specification, and fitted in accordance with B.S. Code of Practice for installation of gas meters.

The dry meter (*see Fig. 2*) consists essentially of a sheet-iron or steel box, 6, divided horizontally by a valve plate, 9, into two main chambers, the upper of which is termed the attic, the lower the body. The body is divided into two compartments by the diaphragm plate, attached to either side of which are the diaphragms of sheepskin, 11. The diaphragms are supported conically by attachment to diaphragm disks, 10, which are in turn supported by hinges, 12, known as flags. Lateral movement of the diaphragms is caused by their inflation and deflation by the gas in its passage through the meter. This lateral motion is communicated by the flags which are attached to flag rods, 3, mounted

vertically, and which, by means of tangential gearing in the attic, convert it into rotary motion to



**Meter.** Fig. 2. Diagrammatic vertical cross-section of dry gas meter showing one bellows. A similar bellows is mounted on the back. Upper diagram is a plan of the attic showing the valves, 13, and gearing mechanism

actuate the recording index and, in addition, work the valves which open and close the admission and outlet ports to the measuring chambers. Gas enters at inlet 1, and leaves at outlet 7. The flag rods pass through gas-tight stuffing boxes 8. The large dial 2 is for testing and the smaller dials or figures record the gas consumption. The direct reading index 4 is superseding the dial type.

**WATER METERS.** These are used to record the quantity of water passing into premises through a supply line; or to register the flow at any particular point in a distribution system. For large flows, a Venturi type of mechanism is used. The water passing through is measured (1) by a pair of pistons working in cylinders of known capacity, into each of which the water enters in turn; the piston movement is transmitted to a graduated dial; (2) by a moving gate or flap in the waterway, connected by linkage to an indicator recording on a chart affixed to a rotating drum; the greater the rate of flow, the wider the gate opens; (3) by the principle of the Venturi tube (*q.v.*): water flowing through the narrowed throat of the tube loses head but gains

velocity; after leaving the Venturi throat it loses velocity but regains head. Thus there is a pressure difference between the upstream side of the tube and the throat equal to the difference of head. Pressure pipes leading from the upstream side of the tube and from the Venturi throat are taken to float chambers, in which floats rise and fall with the columns of water therein and communicate information to the recording apparatus. The latter comprises a rotating drum where time intervals and the rate of flow are registered. Integrating mechanism records the total flow on counter dials.

**Metford, WILLIAM ELLIS** (1824-99). British inventor. Born at Taunton, Oct. 4, 1824, and educated at Sherborne, he was apprenticed to Isambard Brunel and became a railway engineer. In 1856 he went to India in the service of the E. India rly., and saw fighting in the Mutiny. He invented an expanding bullet in 1863 and a rifle for it in 1865, but the bullet was condemned by the St. Petersburg convention of 1869. In 1871 he produced a breech-loader which won the Wimbledon prize. In 1888 his improvements and inventions were incorporated with those of S. P. Lee in the Lee-Metford rifle adopted by the British army. He died at Bristol, Oct. 14, 1890.

**Methane.** Colourless, odourless gas. Found in the free state in nature, its chemical formula is  $\text{CH}_4$ . In its pure form it burns with a pale, non-luminous flame. It is the lowest of the paraffin series of hydrocarbons and is the only one with but a single atom of carbon in the molecule. Also known as marsh gas, firedamp, and methyl hydride, it is given off by decaying vegetable matter in stagnant pools and marshes, and, when ignited, forms the will-o'-the-wisp. Large quantities of firedamp (*q.v.*) are formed in coal measures by the slow decomposition of the coal.

Methane is a constituent of coal gas. Prepared by heating equal parts of dried sodium acetate and soda-lime in a copper flask, and collecting the gas over water, it generally contains hydrogen and ethylene as impurities. To prepare chemically pure methane, methyl iodide is dropped slowly into a flask containing a copper-zinc couple covered with dilute alcohol. The flask is gently heated, and methane is evolved. See Hydrocarbon.

**Methil.** Seaport of Fifeshire, Scotland, forming part of the police borough of Buckhaven and Methil (*q.v.*). On the N. shore of the Firth of Forth, 1 m. S.W. of Leven by rly., Methil has a tidal harbour, with three docks, and exports coal. Pop. 2,559.

## METHODISM: HISTORY AND TEACHING

Rev. Leslie F. Church, Ph.D., Connexional Editor, Methodist Church

*This article deals with a religious movement that originated in 18th century England and became one of the great world-wide branches or denominations of the Protestant faith*

Methodism was originally a term of ridicule applied to religious extremists, but has now been accepted as an honourable description of an important branch of the Christian Church. Methodism was largely responsible for the evangelical revival of religion in 18th century England. In 1729 a small group of Oxford students banded themselves together to study the Bible regularly, to visit prisoners in the Bocardo, the Oxford jail, to care for the poor, and to observe the ordinances of the Church, especially Holy Communion. They were called Bible Moths, the Holy Club, and, because they had agreed to "live by rule," Methodists. The movement was a virile spiritual reaction against the selfish and artificial life of the time. Religion particularly in the form of cold deism, had lost touch with the people. The masses were discontented, hungry, and inarticulate; English political and philosophical

leaders were for the most part ignorant of their existence or indifferent to their needs. Perhaps the influence of Methodism saved England from the excesses of the French Revolution, not by administering an opiate but by quickening the despairing multitudes to new hope and self-respect.

In 1735 John and Charles Wesley went to Georgia with the idea of helping General Oglethorpe in his colonial administration, and of "converting the Indians." They were unsuccessful, and returned deeply concerned about their failure. Three years later, after being influenced by the Moravians, the two brothers experienced a spiritual transformation. They were converted. From cold, scholarly churchmen, they became warm-hearted powerful evangelists. Religious societies, not unlike the little Oxford fellowship, were founded all over the land. Methodism grew with

amazing rapidity. Itinerant preachers, directed by John Wesley, the greatest of them all, ranged the country. Religious apathy was ended by the creation of fellowships (band-meetings and class-meetings) formed by men and women who had a new and intimate sense of the presence of God in their lives.

In 1739 the first preaching-house was built at Bristol. In London Wesley bought the Foundry, an old cannon factory, which he adapted as a chapel. In 1741 Thomas Maxfield was allowed to function as a lay-preacher, and so began what has become one of the most important features of Methodism. Local preachers, as they are now called, today number in the British Isles alone, 27,560.

In 1741 Wesley and his followers declared themselves opposed to the Calvinistic doctrine of "election," maintaining the Arminian doctrine of "free grace for all." This led to a break with George Whitefield, who had long been associated with the Wesleys.

#### The Conference

The first Conference, consisting of six clergymen and four lay-preachers, met in 1744, in London. Conferences have been held each year since, and the Conference has become a vital part of the constitution of the Methodist Church. "It is," says Dr. Fitchett, "a parliament with all the functions of legislation, a cabinet of administration, a court of discipline, and the machinery by which the system of an itinerant ministry is regulated." It is a representative body, democratically elected, and consisting at present of 650 members, 325 of whom are ministers and 325 laymen. Each year a president and vice-president are elected by the members. It has a ministerial session of 450 ministers.

The Methodist societies, consisting of the members of the local classes, are grouped in circuits geographically; the circuits are combined in districts, each similar to a diocese. Superintendent ministers have charge of circuits, and chairmen administer the districts. The individual member is related to Conference through his class, the local leaders' meeting, the circuit quarterly meeting, and the district synod.

Methodism has retained the general organization of the primitive Christian Church. Its constitution is presbyterian rather than episcopal, but its stewards correspond to the "deacons," its

local preachers and exhorters to the "prophets," and its class-leaders to the "teachers" of sub-apostolic times.

In 1747 Methodism spread to Ireland and in 1751 to Scotland. In 1784 Wesley, as a presbyter of the Church of England, claimed the right to ordain Dr. Thomas Coke and Francis Asbury as "superintendents" for the work in N. America. They were subsequently termed "bishops" in the Church, which became known as the Episcopal Methodist Church of U.S.A. Though the Wesleys remained nominally in the Church of England, many pulpits were closed to them. This led to the field-preaching which was, in its early years, the most important side of their evangelistic efforts. By 1784 there were 359 Methodist preaching-houses in England. Today the number of churches under the jurisdiction of the English Conference is 16,459.

If John Wesley by his preaching and statesmanship became the preacher of the Methodist Church, Charles Wesley with an inimitable tenderness sang the theology of the evangelical revival into the hearts and minds of the people. His hymns have had an abiding influence throughout Christendom, and have conveyed the message of "free salvation" more intimately than the words of the preachers.

It was obvious at the death of John Wesley that the Methodists would separate from the Church of England, and indeed he himself had prepared for the event. It has since been felt that a wiser handling of the situation by the contemporary Anglican leaders might have prevented the division. In 1795 a "plan of pacification" established for Methodists the right to administer the sacraments and to hold their services during the statutory hours for public worship.

#### Characteristics of Methodism

Methodism, from the beginning, revealed a genius for social and educational reforms. Its early preachers carried cheap but wholesome literature in their saddlebags, and encouraged the illiterate to read. Some of the strongest opponents of the slave-trade were amongst the Methodists, and in later years they showed enterprise in new forms of home mission work, and in widespread missionary activities overseas. Methodism has always claimed as its motto John Wesley's famous words: "The world is my parish." At the end of the 19th century there began the forward movement which was

designed for the evangelisation of London and the larger towns. A sum of a million guineas was raised by 700,000 Methodist contributors to carry on this work, and to build great central halls to serve as headquarters for religious and social activities.

In 1796 Alexander Kilham founded the Methodist New Connexion. He had criticised the constitution of Wesleyan Methodism as not being sufficiently democratic, and maintained the right of all Methodist preachers to administer the sacraments. In 1815 the Bible Christians, or Bryanites, established themselves as another branch of Methodism; so did in 1827 the Protestant Methodists, in 1835 the Wesleyan Methodist Association, and in 1849 the Wesleyan Reformers. Subsequent fusions brought these smaller bodies together, until in 1907 they were all united as the United Methodist Church.

In 1810 Hugh Bourne and William Clowes founded a society known first as Camp Meeting Methodists, but in 1812 as Primitive Methodists. This and the other sections which had sprung from Wesleyan Methodism differed little in theological outlook. The divisions were caused largely by disagreement on points of administration and procedure.

#### Reunion of all Branches

After long negotiations the Wesleyan Methodists, the Primitive Methodists, and the United Methodists decided to effect a complete union. The Methodist Church Union Act was passed in 1929, and in 1932, by the deed of union, the amalgamation was completed. Though this meant some adjustment in the constitution of each of the three Churches, it maintained the doctrinal standards to which all three had subscribed.

In order to secure uniformity in administering Trusts there is a model deed on which the greater part of Methodist properties are now held.

In Canada all the Methodist sections united to form the Canadian Methodist Church in 1883, and in 1925 this Church joined with the majority of Presbyterians and Congregationalists to form the United Church of Canada.

In Australia, New Zealand, and South Africa there are flourishing Methodist churches with their own conferences and without any sectional distinctions.

Methodism came to America first through Capt. Thomas Webb,

an English officer, Philip Embury, and Barbara Heck, settlers from Ireland who had been exiled from the Palatinate. The first Methodist conference in America was held at Philadelphia in 1773. Today it is estimated that there are 16,049,841 members of Methodist churches in the U.S.A. The approximate world figure of membership is 19,300,000, but the number of adherents is estimated at over 30,000,000.

The doctrinal standards of Methodism are still Wesley's four volumes of sermons, and his *Notes on the New Testament*. Recently new editions with explanatory notes have been prepared. The doctrines specially stressed are Assurance, Conversion, and Holiness or Christian Perfection. Fundamentally the Methodists hold theological beliefs similar to those accepted by the evangelical section of the Church of England.

The training of candidates for the Methodist ministry has been steadily progressive. At present there are in England six theological colleges: Hartley (Manchester), Didsbury (Bristol), Richmond (London), Headingley (Leeds), Handsworth (Birmingham), and Wesley House (Cambridge). There is also a Methodist theological college at Edgehill, Belfast. Most of these are affiliated to the neighbouring university, and their staffs are recognized.

#### Basis of Membership

The basis of membership in the Methodist Church is laid down in the Standing Orders. Members must "sincerely desire to be saved from their sins through faith in the Lord Jesus Christ, and evidence the same in life and conduct," seeking "to have fellowship with Christ Himself and His people by taking up the duties and privileges of the Methodist Church." Their names are enrolled on class-books, and each person is under the pastoral care of a class-leader. They are expected to have received Christian baptism either as infants or adults before they are received into full membership of the Church.

Recently the Methodist Church in Great Britain and Ireland has appointed commissions to report on Methodism in rural areas, and on the state of the Church generally. The activities of its youth, its newly-developed women's fellowship, and other signs, point to a revival of the spiritual enterprise of its earlier years.

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**Methuen**, PAUL SANFORD METHUEN, 3RD BARON (1845-1932). British soldier. Born Sept. 1, 1845, he was educated at Eton, and in 1864 was commissioned in the Scots Guards. He served in Ashanti, 1874, and the Egyptian War, 1882; commanded Methuen's Horse in Bechnanaland, 1884-85; and was a divisional commander in the S. African War, 1899-1902. Sent to relieve Kimberley, he was defeated at Magersfontein, Dec. 12, 1899. In March, 1902, he was taken prisoner at Tweebosch. He was c.-in.-c. in S. Africa, 1907-09, governor of Natal, 1909, and governor of Malta, 1915-19. In 1911 he was made a field-marshal, and in 1920 became constable of the Tower of London. He died October 30, 1932. His son, Paul Ayshford Methuen, who succeeded as 4th Baron, was born Sept. 29, 1886, and educated at Eton and New College, Oxford. A distinguished painter and pupil of Sickert, he had several one-man exhibitions. He was a trustee of the National Gallery, and of the Tate Gallery, 1938-45.

**Methuen Treaty.** Treaty concluded Dec. 27, 1703, with Portugal by Sir Paul Methuen, acting on behalf of Great Britain. Its effect was to bring Portugal into the war of the Spanish Succession as a member of the Grand Alliance (q.v.). Portugal was to provide 28,000 troops, Britain agreeing to pay for the maintenance of half of them. The treaty also gave advantage to Portuguese wine in the English market, and corresponding advantage to English wool in the Portuguese markets. From the Methuen Treaty dates the popularity of port wine in England.

**Methuselah.** Son of Enoch and grandfather of Noah (Gen. 5). He is stated in the O.T. to have lived 969 years, the greatest age recorded among the patriarchs, but the

Samaritan text gives it as only 720 years. These figures are considered to be merely traditional.

**Methven.** Parish and village of Perthshire, Scotland. It is 8 m. by rly. W. of Perth. The churchyard contains the tomb of Lord Lynedoch, the General Graham of the Peninsular War. In the battle of Methven, 1306, the English were successful over Bruce. Methven Castle dates partly from 1680. Pop. 1,700.

**Methyl.** Name given to the group of elements represented by the formula  $\text{CH}_3$ . It is not known in the free state, but its derivatives are very numerous. The name was originally applied to ethane ( $\text{C}_2\text{H}_6$ ) until the true constitution of the molecule was recognized. See Carbonates.

**Methyl Alcohol.** Colourless liquid with an odour like that of ordinary alcohol (ethyl alcohol). On ignition it burns with a blue flame, and, like ethyl alcohol, it possesses great solvent powers. In the crude state it is known as wood naphtha or wood spirit, because until recently it was prepared on a large scale by the dry distillation of wood. It is freed from acetic acid, acetone, and other bodies produced at the same time by rectifying in stills similar to those employed in purifying alcohol. Methyl alcohol is also produced as a by-product in the beet-sugar industry. Synthetic methyl alcohol is now made on a large scale from water gas by a catalytic process.

Commercial wood spirit contains from 75 to 90 p.c. of methyl alcohol. This spirit is used as a solvent for making varnishes and french polish, and as a denaturant of methylated spirit. The commercial spirit is purified by distilling with lime and fractional distillation, and chemically pure methyl alcohol may be made from commercial spirit by mixing it with calcium chloride, and heating. When the compound thus formed is heated pure methyl alcohol is obtained. The purified wood spirit is largely used in the manufacture of aniline dyes.

**Methylamine.** Colourless gas with a fish-like odour. It was discovered in 1849 by Wurtz, who prepared it by acting upon methyl isocyanate with caustic potash. It is contained in bone oil, crude wood spirit, and herring brine. Dimethylamine and trimethylamine are also known. These are liquids with a characteristic fishy odour.

**Methylaniline.** Alkyl derivative of aniline. It is manufactured by heating aniline with methyl

alcohol and hydrochloric acid, and is a colourless liquid. It is extensively employed in the dyeing industry and as the raw material for explosives.

**Methylated Spirit.** Alcohol which has been rendered unfit for use as a beverage by denaturising. The object of the process is to allow the sale of alcohol for manufacturing purposes free of the heavy duty charged on alcohol. There are four kinds of methylated spirit: (1) mineralised methylated spirit, consisting of alcohol mixed with one-ninth of its bulk of wood naphtha,  $\frac{1}{2}$  p.c. of crude pyridine, three-eighths of 1 p.c. of petroleum, and a trace of aniline dye; (2) industrial methylated spirit, containing only one-nineteenth of its bulk of wood naphtha; (3) pyridinised industrial methylated spirit, which is the same as (2) but with  $\frac{1}{2}$  p.c. of crude pyridine; and (4) power methylated spirit, consisting of alcohol to which have been added small quantities of petrol, pyridine, wood naphtha, and dyes. Retailers of methylated spirit must have a licence.

**Methylene Blue.** Aniline dye first prepared by Caro in 1876. It is much used in cotton dyeing and calico printing on account of its fastness to light, is of considerable value as a staining material in bacteriological work, and is used as a biliary disinfectant.

**Methyl Methacrylate Plastics.** Class of synthetic materials. Although methyl methacrylate, chemical formula  $\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$ , has been known since the mid-19th century, it was not until 1901 that the process of its controlled "build-up" was discussed and examined. Since then, but more particularly from the 1930s the process has become the basis of a number of industries with widely-used products.

Methyl methacrylate in its simple molecular form by the application of heat, ultra-violet light, or certain chemical catalysts can be converted through progressively syrupy stages to the solid stage. This is the so-called polymer, i.e. it is built up from many simple molecules, and the process is referred to as polymerisation (*q.v.*). The methyl methacrylate plastics are thus a series of polymers based on this simple chemical. According to the conditions of preparation the polymer can be made available as a solution in a volatile solvent, as a syrup, as a dough, or as a solid, and at each stage can be worked up as such into end products ranging in variety from a

complete denture to the astral-dome in a bomber aeroplane.

The liquid methyl methacrylate, containing a suitable catalyst (usually benzoyl peroxide) in controlled amount, is poured into a shallow glass tray and subjected to ultra-violet light under such conditions that the molecular build-up takes place gradually. Finally transparent sheets are obtained, having the highly polished surface of the mould. These sheets are thermoplastic, so that they become flexible at 120–140° C., in which condition they can be pressed or pulled into a desired shape, which will be retained when the temperature has returned to normal. There are also possibilities of working these materials at what may be regarded as a half-way stage. Fortunately the polymer is soluble in the liquid monomer, a fact which has been made use of in the production of dentures.

**Methyl Salicylate.** Chief constituent of oil of wintergreen, distilled from the bark of *Betula leuta*. It possesses a characteristic odour, and is a sovereign remedy in the treatment of rheumatism and in the relief of rheumatic pain. Methyl salicylate is made artificially by dissolving salicylic acid in methyl alcohol, then gradually adding sulphuric acid, maintaining at a moderate temperature for 24 hours, and distilling in a current of steam. The product is nearly identical with that prepared from oil of wintergreen.

**Metis** (Gr., wisdom). In Greek mythology, one of the daughters of Oceanus, the first wife of Zeus. She was so wise and prudent that Zeus, fearing she might bring into the world a child destined to become wiser than himself, devoured her when she became pregnant, the result being that Athena was born from the head of Zeus.

**Metol.** Salt of p-methylaminophenol used as a photographic developing agent. It is prepared by boiling together for about an hour p-amidophenol and chloroacetic acid. On cooling p-hydroxyglycine crystallises out, and on melting this at 245° to 247° C. carbonic acid and metol base result as products of decomposition. The average amount of metol required per ounce of developer is 2½ grains. It is a "soft" working developer, and is therefore frequently used in combination with hydroquinone. See Photography.

**Metonic Cycle.** Cycle of 19 solar years, approximately equal in duration to 235 lunar months. It was discovered by Meton, from

whom the name is derived, that the moon passes through the same cycle of changes every 19 years, e.g. an eclipse of the moon in 1950 will recur in 1969. The cycle is used in the determination of ecclesiastical feasts, since Easter Sunday is chosen to follow a full moon, the first moon after the spring equinox. See Golden Number.

**Metonymy.** Figure of speech in which an attribute is used in place of the person to whom it applies. Examples are "the bench" to mean the body of judges who sit on the bench, and "the purple" for an emperor because he wore purple robes.

**Metope** (Gr. *metopē*, space between two beam-ends). Term in architecture applied to the slab or



Metope. Specimen of the Doric type

tablet of stone or marble filling the space between two triglyphs (*q.v.*) of a Doric frieze. In the most ancient buildings the metope was an open space, but in extant classic architecture it is a slab which is either blank or bears a decorative design, sometimes painted, but more often sculptured in high or low relief. See Entablature; Frieze.

**Metre** (Gr. *metron*, measure). Word used in two special connexions: (1) The standard unit of length adopted by the French convention in 1799. (See Metric System.) (2) The arrangement of groups of one or more syllables, measured by stress or by quantity, in definite forms constituting lines and verses, which are the units of metrical compositions. This subordination of rhythm to law constitutes the capital difference between verse and prose. See Poetry; Prosody; Rhythm; Verse.

**Metric System.** Connected system of weights and measures based upon an arbitrary unit, the metre. Any set of measurements involves two considerations, the unit of measurement, and the relation between multiples of the unit. In the British system the unit of length is the foot and that of weight the pound; and the numbers of feet in a yard, furlong, and mile bear no common relation either to one another or to the number of pounds in a stone, cwt.,



or ton, so making calculations and comparisons difficult to carry out quickly. The metric system aims at simplification, the various units are rationally connected, and the scale of numeration is the same for most units. This common scale involves merely the decimal system of notation, the familiar system of counting by tens, where the value represented by a figure depends upon its position to the right or left of the unit's place.

In the metric system we have as names and symbols K=kilo= $10^3$ , H=hecto= $10^2$ , D=deca= $10$ , where kilo, etc., are derived from Greek; and d=deci= $10^{-1}$ , c=centi= $10^{-2}$ , m=milli= $10^{-3}$ , where milli, etc., are derived from Latin, designated by a small letter and used for quantities less than the unit. The quantity 5,432-768 metres can be immediately read as 5 kilometres, 4 hectometres, 3 decametres, 2 metres, 7 decimetres, 6 centimetres, and 8 millimetres. If the quantity is not a length, but a weight, then the only change necessary is the substitution of the word grams for the word metres. The use of the decimal system makes for simplification; 5,432-768 feet is equal to 1 mile 152-768 ft., or 1 mile 50 yards 2-768 ft., and a certain amount of calculation is necessary to discover these equivalents.

#### History of Metric System

The metric system was invented towards the close of the 18th century, a committee of five being appointed in 1790 by the French government to determine the unit of length. In 1793 a commission of twelve considered the units then in use, and in 1798 an international commission representing ten European states reviewed the work accomplished by these bodies. On June 22, 1799, the metric standards were ceremonially deposited in the French archives. An act passed in 1837 made the new system obligatory throughout France. The fundamental unit, the metre, was selected as the ten millionth part of a quadrant of the earth's circumference, i.e. of the distance between the equator and the pole. This was hailed as a natural unit, but later investigations showed that this quadrant varies in length, with the consequence that the metre is defined as the distance between two marks upon a bar stored in the observatory of the international bureau of weights and measures at St. Cloud; it thus became quite arbitrary.

Originally it was intended that units of weight and capacity should

be derived from the metre. Because the mass of the standard kilogram in Paris is not exactly that of 1,000 c.c. of water at standard temperature and pressure, the simple relationship does not quite hold. One litre is the volume of one kilogram of water at maximum density and equals 1000-028 c.c. Other units, such as the are, for square measure, and stere, for cubic measure, are convenient renamings of multiples of the primary units. In superficial and volumetric measures the decimal notation is modified; with areas the multiples change by 100 at a time, e.g. 100 sq. m.=1 sq. Dm. and 100 sq. mm.=1 sq. cm.; or 64-73 sq. Dm.=6,473 sq. m.=0-6473 sq. Hm.; and with volumes the change is by 1,000 at a time, e.g. 1,000 c.c.=1 cu. dm.; or 847-283 c.c.=847,283 cu. mm.=0-847283 cu. dm. The metric system has been extended to currency, for 100 centimes=1 franc and 100 centesimi=1 lira, etc.

The facility with which the metric system can be used has led to its adoption internationally by scientists, and as the national system by most countries, the chief exceptions being the U.K. and British commonwealth, the U.S.A., and Russia. Efforts have been made to secure universal adoption of the system, but without success.

**METRIC ABBREVIATIONS.** K=kilo, H=hecto, D=deca, M=myria (ten thousand), d=deci, c=centi, m=milli; m.=metre, c.c.=cubic centimetre, g.=gram, Kg.=kilogram, l.=litre, Hl.=hectolitre, a.=are, s.=stere, t.=tonne, q.=quintal.

**METRIC EQUIVALENTS.** 1 a.=100 sq. m. 1 sq. Km.=100 Ha. 1 t.=10 q.=100 Kg. 1 s.=1 cu. m.=1,000,000 c.c. 1  $\mu$ =1 micron=0-000001 m. 1  $\mu$ g.=1 microgram=0-000001 g.

**METRIC AND APPROXIMATE ENGLISH EQUIVALENTS.**

1 m.=39-37 inches= $3\frac{1}{4}$  ft.  
1 Kg.=2-2046 lb.  
1 tonne=0-9842 tons.  
1 Km.=0-62138 miles=5 furlongs.  
1 sq. Km.=0-3862 sq. miles=247-17 acres.  
1 Ha.=2-471 acres.  
1 l.=0-2199 gallons= $1\frac{1}{2}$  pints.  
1 g.=15 $\frac{1}{2}$  grains.

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**Métro.** Popular name for the Paris underground electric railway, properly called Métropolitain. Its

14 lines cover 165 $\frac{1}{2}$  km., linking all quarters of the city, with 341 stations. A standard fare is charged regardless of the length of the journey; books of season tickets are obtainable. The trains are designed primarily to accommodate standing passengers, and there is only one class. Construction of the Métro began in 1898; the first train ran on July 19, 1900.

**Metronome.** Instrument for indicating the exact pace of music. Experiments in its construction



Metronome. Form of instrument for measuring musical time

Boosey & Hawkes

date back to the 17th century, or perhaps earlier. About 1812 Winkel, an Amsterdam mechanic, experimented successfully with a pendulum suspended by its centre, having a weight at each end. By sliding one of the weights, all rates of speed are obtainable with quite short rods. This principle was appropriated as his own invention by J. N. Mälzel (1772-1838). Some early metronomes had arbitrary rates of time, but the minute is now adopted as the standard, so that the indication  $\text{♩}=88$  (for example) means that the pace is to be 88 minims to the minute.

**Metropolitan.** Term for the chief bishop of a country or province. In the Greek Church a metropolitan is intermediate between a patriarch and archbishop, but in the R.C. Church is equivalent to an archbishop. In the Anglican communion he is generally the head of an ecclesiastical province, whether archbishop or bishop. Thus the archbishop of Sydney is metropolitan of New South Wales. The metropolitans in England are the archbishops of Canterbury and York. See Archbishop; Bishop; Patriarch; Primate.

**Metropolitan Asylums Board.** Body of men and women which managed certain hospitals and institutions in the county of London. It provided an ambulance service, hospitals for imbeciles, for those suffering from infectious diseases, and for certain classes of sick children. It had also homes and schools for defective children, and managed casual wards and sanatoria for consumptives. The board, established in 1867, came in 1929 under control of the L.C.C. Its offices are County Hall, S.E.1.

### Metropolitan Board of Works.

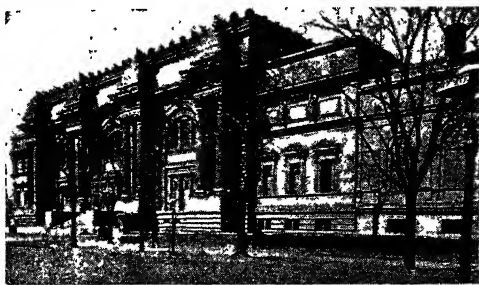
Body established in 1855 to supervise the drainage, buildings, etc., of London, to which a definite area was then given. The members were elected by the vestries and district boards of the various parishes in the metropolis. In 1888 an inquiry into the working of the board revealed an unsatisfactory state of affairs, and it was replaced by the London County Council (*q.v.*).

**Metropolitan District Railway.** Former name of a section of the London Transport system. Inaugurated in 1863, it was closely associated with the Metropolitan line (opened in 1863), the two combining to form a rough circle serving districts of inner London. Leaving the inner circle at High St., Kensington, a main line went to Ealing and S. Harrow, branch lines serving Richmond and Hounslow. Another branch from S. Kensington ran to Wimbledon. The track was not laid far below ground, but was constructed on the "cut-and-cover" system in cuttings, these being roofed and sometimes built upon. Motive power at first was steam. The inner circle was completed in 1884, and the extension from Ealing to Harrow was opened in 1903. In 1933 the line was amalgamated with other London transport systems.

**Metropolitan Museum of Art.** Museum in New York, one of the most important in the world. It stands in Central Park, opposite 82nd Street, on a site in which there is plenty of room for expansion, and is notable for the number of its special collections. These include the Cesnola collection of Cypriote antiquities, said to be the largest of the kind ever made; and the Riggs collection of armour, illustrating European, Japanese, and Chinese work, and including suits of mail belonging to Philip II of Spain and Henry II and Henry IV of France. The comparatively small but excellent general collection made by Benjamin Altman, and by the terms of his bequest displayed as a whole, is rich in Rembrandts, and includes fine specimens of the work of Hals, Angelico, Botticelli, and Dürer.

J. P. Morgan's principal gift to the museum was perhaps Raphael's

Colonna Madonna, but he enriched almost every department of it, and his donations were of the value of well over £2,000,000. The tapestries from Burgundian and Alsatian looms and the collection of china are some of the most interesting of his contributions. The Morgan collection fills an entire wing. Another wing, the gift of Mr. and Mrs. Robert W. de Forest, is devoted to early American decorative arts. Mention should be made of the costume institute, the print study room, and special collections associated with the names of Theodore Davis, Michael Friedsam, H. O. Have-



Metropolitan Museum of Art, New York City, U.S.A.

meyer, and George Blumenthal. A branch of the museum, in Tryon Park, is the Cloisters, reconstructed with original elements from medieval French monasteries.

The museum is strong in pictures. Rosa Bonheur's *Horse Fair* is one of its chief treasures, and it has some good Van Dycks and Rubenses. Its modern pictures include one or two splendid Meissoniers and Détaillés, a few Whistlers and Sargent's, and a representative collection of contemporary American art. Archaeological galleries contain frescoes from the Pompeian villa at Boscoreale and a bronze-plated Etruscan biga or ceremonial chariot of the 6th century. A gallery of architectural casts includes the Portico of the Erechtheum, and models of Notre Dame and of the Parthenon. Plans in 1947 provided for a new building to house the present contents and also the Whitney museum of American art, making five museums in one.

**Metropolitan Opera House.** Building in New York. It covers the block between 39th and 40th Streets on Broadway. Completed in 1883, it was partly destroyed by fire and restored in 1893. Its ground-plan affords, from many balcony seats, a whole view of expensive boxes, but only a half view of the stage; this contact of the poorer community with the

wealthy was an avowed aim of the founders. The star system, under which patronage was asked only for individual artists, ceased to pay by 1935, when a repertory company was formed, all on yearly contracts. Caruso, Melba, and Arturo Toscanini had been launched into world fame under the earlier system. Ballet is given, and operas in English, French, Italian, German, and Russian. Broadcasts of matinee performances have yielded \$90,000 a year. Bernard Shaw gave his single American lecture from the stage of the Metropolitan Opera House.

**Metropolitan Police.** Name given to the force responsible for policing the metropolitan area of London. This area, which is the London police district, constitutes one of the many "London's," and includes roughly all territory within a 15-m. radius of Charing Cross, excluding the City of London. The area is about 700 sq. m. and its pop. almost 9,000,000. The metropolitan police have jurisdiction over the Thames between Dagenham and Teddington Lock and are employed in H.M. dockyards. The force has an establishment of some 21,000 men and women, the latter numbering about 150 in 1947. It is controlled by a commissioner, with one deputy and three assistant commissioners.

In addition to the usual police work the metropolitan police are responsible for the regulation of traffic and for the issue of licences to vehicles plying for hire. The force is divided into 29 divisions, each under a superintendent. Most of these divisions are represented by letters of the alphabet, *e.g.* A for Whitehall.

At the outbreak of the Second Great War the police war reserve and the special constabulary reserve were mobilised; and the women's auxiliary police corps formed. Owing to the greater calls imposed on the regular police by the German air attacks in the metropolitan area, more duties had to be undertaken by the reservists and specials than had been first anticipated. Shortage of manpower after the war led to the retention of a number of war reservists in the force. *See* Detective; New Scotland Yard; Police.

**METROPOLITAN POLICE COURTS.** The name given to the 13 police courts in London within the metropolitan police area. The City of London has its own court at the Mansion House. They are: Bow Street, Marlborough Street, W., Clerkenwell (King's Cross Road, W.C.),

Old Street, E.C., Lambeth (Renfrew Road, S.E.), Marylebone (Seymour Place), Tower Bridge (Tooley Street, S.E.), Thames (Aylward Street, Stepney), Greenwich and Woolwich, W. London (Southcombe Street, Hammersmith), South-Western (Balham), N. London (Stoke Newington Road, N.), West Ham (West Ham Lane, Stratford, E.).

Bow Street, the chief police court, developed out of the public office to which paid magistrates were appointed in the 18th century. At the end of that century, a number of other courts were established in different parts of London — Westminster, Clerkenwell, Whitechapel, etc., with paid justices. The Thames court was established at Wapping in 1800, to deal with crime on the river.

In 1821 the old court at Shadwell was established, and a new one established at Marylebone; Whitechapel court was removed to Lambeth in 1884; those at Greenwich and Woolwich, S.W. London, N. London, and W. London were established later. That at West Ham has one magistrate and a deputy, who are appointed by the home secretary, under the Municipal Corporations Act, 1882, being outside the county borough of London, but in the police area. At Bow Street are three magistrates, the senior of whom is the chief magistrate for London.

These courts deal with petty crime and drunkenness, and hear all cases in their area in the first instance, those referring to serious crime—murder, wounding, and burglary—being remitted by the magistrates to the criminal sessions at the Central Criminal Court, or London Sessions. The magistrates sit for a short time prior to the opening of cases to give advice. Many famous magistrates have sat at these courts, e.g. Sir John Bridge at Bow Street; W. C. Plowden at Marylebone. Juvenile courts are held in buildings separate from police courts.

**Metropolitan Railway.** Former name of a section of the London Transport system. The first underground passenger rly. in London and the world, its first section, from Bishop's Road, Paddington, to Farringdon Street, was opened in 1863. The company soon extended its system, reaching South Kensington in 1868, and Aldgate in 1876. The inner circle was completed in 1884, with the section between Aldgate and the Mansion House. In 1868 the extension to St. John's Wood was

opened, and this was gradually pushed out into the country. In 1904 the extension to Uxbridge was opened. The electrification of the line, begun in 1905, was completed as to the inner circle by Sept. that year. Electrification of other sections followed.

Jointly with the L.N.E.R. the Metropolitan rly. co. owned the line which serves Middlesex and Buckinghamshire, from Harrow to beyond Aylesbury. The Great Northern and City, a tube line connecting Moorgate in the City with Finsbury Park, belonged to this company. The total mileage owned, partly owned, or worked, was 179 when the company was absorbed by the London Passenger Transport Board in 1933. See London Transport; London Railways. colour map.

**Metropolitan Tabernacle, THE.** Baptist place of worship, Newington Butts, London, S.E. It was opened Sept., 1900, on the site of a similar structure, built in 1860-61, at a cost of £31,000, for C. H. Spurgeon (q.v.) and destroyed by fire, April 20, 1898. The second structure, which cost £44,576 and had accommodation for 6,000, was burnt out on May 10, 1941, during a German air raid. Services continued in underground rooms.

**Metropolitan Water Board.** Municipal body established in 1902 to take over the task of supplying London with water. It began work in 1904, when the first board was elected. It consists of 66 members, chosen for three years by various authorities in the Metropolis. Among these are the London County Council, which elects 14; the 28 metropolitan borough councils, which elect one each; the county councils of Middlesex, Kent, Surrey, Essex, and Hertford, the Thames and Lea conservancies, and others. The board provides water from the Thames, Lea, and wells for nearly 6,500,000 persons in 560 sq. m. in the counties of London, Middlesex, Surrey, Kent, Essex, and Hertford. It has an income of over £7,000,000, and a debt, mainly incurred in buying out old companies, of over £55,000,000. The George VI reservoir at Staines was opened on Nov. 7, 1947. It has a storage capacity of 4,466,000,000 gallons, is 2,037 yds. long, and from 722 to 962 yds. wide. The offices are at New River Head, Rosebery Avenue, London, E.C.1.

**Metsu, GABRIEL** (1630-67). Dutch painter. Born at Leyden, he was a pupil of Gerard Dou, and in 1657 went to Amsterdam, where he died. His work shows the

influence of various painters. At first he worked in the neat and smooth manner of Dou, but about 1655 he came under Rembrandt's influence. Later he reverted to a more minute and finished manner. His pictures are refined studies of domestic life. Examples may be seen in the National Gallery and Wallace Collection, London.

**Metternich, CLEMENS WENZEL** LOTHAR, PRINCE (1773-1859). Austrian statesman. Of a diplomatic family, he was born at Coblenz May 15, 1773, and brought up at the courts of German princes before working with his father at the embassy in Brussels. He married in 1795 a grand-daughter of the great Kaunitz, thus assuring himself of a future at the Viennese court. Envoy to Saxony 1801, he was transferred to Berlin in 1803 and to Paris, at Napoleon's request, in 1806. Then began his long understanding with Talleyrand. War breaking out in 1809, Metternich was imprisoned at first but later exchanged for French diplomats. He was Austrian foreign minister, a post he held for 39 years, for much of which time he was also chancellor.



Prince Metternich, Austrian diplomatist

Because he bottled up the forces of nationalism, Metternich has become the bogymen of the Liberal historians. Indeed he stood for a system that was bound to pass, but while delaying its end he kept the peace of Europe from the congress of Vienna, 1815, to the revolutions of 1848. He was the perfect diplomatist, suave, subtle, versatile in method, but inflexible in purpose, which was to hold together an empire of some dozen subject races.

In 1815 he frustrated the schemes of Russia and Prussia in Germany; refused to force impossible terms on France; and converted the tsar Alexander's Holy Alliance to his own practical ends. Thereafter his policy was the static one of preserving the concert of great powers, policing Europe, supervising the press and the universities, resisting demands for constitutions. If his position was weakened by Canning's liberal tendencies and by troubles in the Near East, the ease with which Metternich suppressed revolutions in 1830 measured his success. He was brought down by the rising

of 1848 in Vienna itself, went for a few years to London and Brussels, and, taking no more part in government, died June 11, 1859. His Memoirs were translated in 1880; and lives in English include those by G. B. Malleison, 1888; A. Cecil, 3rd ed. 1947.

**Mettur Dam.** An irrigation scheme on the Cauvery river, Madras state, India. Completed in 1934, it is 230 ft. high and can impound 93,500 million cu. ft. of water. Canals fed by the dam irrigate some 300,000 acres. Part of the water generates hydro-electric power, the power house having been in operation since 1937.

**Metz.** French city and fortress, capital of Moselle dept. It is 38 m. W. by S. of Saarbrücken, and lies on the river Moselle in

architecture resulted, during the period 1871–1918, when Metz was the capital of German Lorraine. Pop. 70,105.

The Gallic Divodorum (castle of the gods), Metz was the capital of the Mediomatrici tribe, later a Roman and Frankish town, capital of Austrasia from 511, and mentioned as a bishopric first in 535. Capital of Lorraine 843, of the Eastern Franks 870, French 911–923, it became a free city of the Empire in the 13th century. Here Charles IV held the diet of 1356 promulgating the Golden Bull. Henry II of France occupied the town in 1552, and in 1648 France was confirmed in possession. Vauban fortified it; the Allies in 1814–15 besieged it in vain; in 1870, under Bazaine, it capitulated to the Germans.

Occupied again by the Germans during the Second Great War, June 17, 1940, Metz lay within the occupied zone of France under the terms of the armistice of June 21. The recapture of Metz in 1944 was one of the hardest fought battles of the Allied campaign in France.

The U.S. 3rd army, under Patton, was unable to overcome the linked forts W. of the city by direct attack. The moated Fort Driant in particular offered fierce resistance; U.S. infantry forced the moat and stormed its outer defences Oct. 3,

gaining control of part of the fort by the 7th, but were compelled to withdraw after a grim ten days' battle inside the fortress. Maizières-Metz, to the N. of the city, then became the focus of intense fighting. It was captured, reduced to rubble, on Oct. 30. On November 8 a "pincer" drive on Metz began from Maizières-Metz on the N. and across the Nied Française river to the S.E. Fort Driant was bypassed, and Metz was formally declared liberated on Nov. 22.

**Metz, CAMPAIGN OF.** Series of battles between French and Prussian armies in the war of 1870. After the disasters of Aug. 6, the French were obliged to retire. Bazaine was directed to move the French left and centre on Châlons to unite with MacMahon, but himself to pass through Metz to prepare the fortress for a siege. The Germans moved forward on a broad front, the 1st army direct on Metz, the 2nd towards Pont-à-Mousson, the 3rd on Nancy.

Bazaine, having halted E. of Metz on Aug. 13, was ordered to retire on Verdun. His movement through Metz began next morning, but advance guards of the 1st German army had already attacked, forcing the French on the right bank of the Moselle to face them in the battle of Colombey-Nouilly on the slopes E. of Metz. Both sides claimed a victory here, but the French withdrew to continue their retreat. Meanwhile the 2nd German army was crossing the Moselle about Pont-à-Mousson.

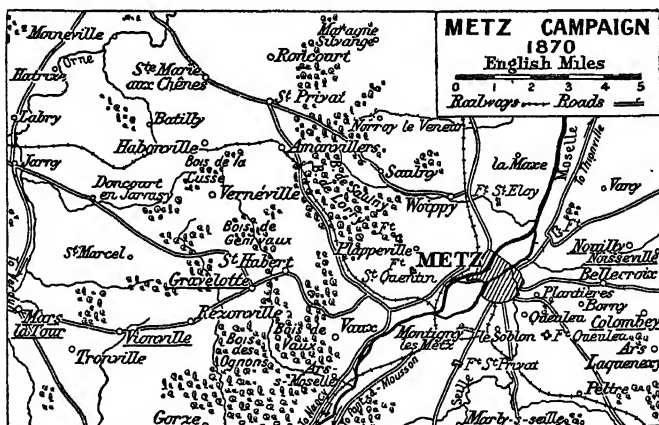
On the 16th, German cavalry from Pont-à-Mousson observed the French moving towards Verdun by the two roads from



Metz. The cathedral of this French fortress city, seen from the south

hilly surroundings, and on rlys. to Paris, Belgium, Luxemburg, and Switzerland. With a number of forts and the military aerodrome of Fresnes, Metz was considered one of France's main military strongholds. It is the trading centre for a fertile agricultural area and wine-growing neighbourhood, and has shoe, preserve, and other factories, including a government tobacco factory. The seat of a bishopric and a court of appeal, it has a permanent theatre, public library, two museums, and many schools.

One of Europe's oldest towns, its inner parts have narrow winding streets leading into the square on which stands the huge cathedral of S. Stephen (13th to 16th centuries), an impressive Gothic pile with a 295-ft. tower, which contains great treasures. S. Martin, S. Segolena, and S. Vincent are other medieval churches; that of Notre Dame, in Renaissance style, dates from 1665 to 1739, and the town church is early 18th century. Good



Metz Campaign. Area of the fighting between the French and the Germans in 1870

Gravelotte to Mars-la-Tour and Doncourt, and the right wing of the 2nd army brought about the battle of Vionville-Mars-la-Tour, in which the French lost nearly 17,000 and the Germans 16,000, after a day of fierce attack and counter-attack. Bazaine thereupon began a retrograde movement towards Metz, reaching early on Aug. 17 a strong position from the Bois de Vaux in the S. to St. Privat and Roncourt in the N.

By the evening of the 17th five German corps of the 2nd army were in line along the Verdun road from N. of Mars-la-Tour to Vernéville, while two corps of the 1st army had also crossed the Moselle and taken up a position on the right S. of Gravelotte. The battle of Gravelotte followed, Aug. 18, the first battle of the war to be fought according to plan. The king of Prussia, with von Moltke, was now with the troops. The Germans won the battle by an extending series of northward marches in échelon of corps until the French right was turned, though the centre and left maintained their ground. Ste. Marie-aux-Chênes, St. Privat (stormed by the Prussian guard, who lost half their number), and Roncourt all fell before nightfall. The numbers engaged in this battle had then scarcely ever been exceeded, for 220,000 Germans attacked 140,000 French in a chosen position. German losses were over 20,500 killed, wounded, and missing, while French casualties numbered only 7,853 killed and wounded, and 4,419 prisoners; but Bazaine had been compelled to fall back into Metz.

The investment of the fortress began next day, the Germans keeping only a number about equal to the French to hold a circumference of 28 m. On Aug. 26 Bazaine pushed back the German outposts to the N.E. in the hope of helping MacMahon's army of Châlons by keeping the Germans E. of the Moselle. On Aug. 31 the day before Sedan fell, he attempted to break out towards Thionville, but had given the Germans too much warning. At the outset, about 4 p.m., the French captured villages to the N.E., but during the night German reinforcements were rushed to the scene. Next day, while the Châlons army was being crushed at Sedan, Bazaine renewed the fight half-heartedly, but withdrew once more to Metz by midday, after engaging about 120,000 men against only 70,000

Germans. One more half-hearted attempt to break out was made on Oct. 7, but three days later a council of war decided to treat for terms of peace. On Oct. 27 the whole of Bazaine's army of the Rhine, 173,000 strong, became prisoners of war, and Metz was handed over to the Germans. See Bazaine; Franco-Prussian War; Moltke.

**Meudon.** Town of France, in the dept. of Seine-et-Oise. It lies 3 m. S.W. of Paris, and 1 m. S. of Sèvres, and is connected with Paris by rly. It has chalk works, and an observatory and magnetic laboratory. Rabelais was priest of the parish, and is commemorated by a monument in the 16th century church. The 17th century château of Meudon was destroyed by the Prussians in 1871. Pop. 20,797.

**Meulebeek.** Town of Belgium, in the prov. of W. Flanders. It lies 8 m. N. of Courtrai, on the Ingelmunster-Thielt rly. The industries include cotton and linen spinning and lace making. Meulebeek was in German occupation throughout the First Great War. Pop. 9,300.

**Meulen, ADAM FRANS VAN DER** (1632-90). Flemish painter. Born in Brussels, Jan. 11, 1632, he was apprenticed to P. Snayers, and in 1665 went to Paris to accept a post in the Gobelins factory. He painted battle scenes of which he acquired a knowledge by accompanying Louis

A. F. van der Meulen.  
Flemish painter  
After Largillière

XIV on campaigns. He died in Paris, Oct. 15, 1690. Characteristic examples of his work are in the galleries of Munich, Versailles, and the Louvre.

**Meunier, CONSTANTIN** (1831-1905). A Belgian sculptor and painter. Born at Etterbeek, Brussels, April 12, 1831, he first appeared at the Brussels Salon in 1851 with a piece of sculpture, *Guirlande*. For a time he abandoned sculpture to paint scenes from the life of the Trappists, and also of peasant life in Spain. He portrays scenes from the life of workers in coal mines, his studio in Louvain being in the heart of the Belgian black country. His chief works include *Grison*, *Le Débardeur*, *Ecce Homo*, *Le Cheval de Mine*, *L'Apothéose du Travail* (with four figures of La Mine, Le Port, L'Industrie, La Moisson), in the Museum of Decorative Arts in

Brussels. He died in Brussels, April 4, 1905.

**Meurthe.** A river of France. Rising in the Vosges, N.E. of Gérardmer, it flows in a N.W. direction into Lorraine. It is joined by the Vezouse near Lunéville, and meets the Moselle near Frouard. The chief towns on its banks are Fraize, St. Dié, Baccarat, Lunéville, and Nancy. Its length is 102 m.

**Meurthe-et-Moselle.** Dept. of France, formed in 1871 after the remaking of the E. frontier of France. Bounded E. by Alsace and Lorraine, it lies contiguous with Belgium and Luxemburg, and with the depts. of Meuse, Vosges, and Moselle. It is generally hilly and well wooded, particularly in the S., where it contains part of the Vosges Mts., but is well cultivated, potatoes, cereals, beets, and the vine being grown. Iron, salt, and building stone are mineral products, and among the varied industries are brewing, timber working, and chemical products, textiles, and glass making. The Meurthe, Moselle, Mortagne, Madon, Sanon, and Chiers are among the rivers; the Canal de la Marne traverses the dept. Nancy is the capital, other towns of note being Toul, Lunéville, Briey, Longwy, Pont-à-Mousson, St. Nicolas, and Baccarat. The dept. was prominent early in the First Great War, as is noted in the articles Longwy, Nancy, etc. Area, 2,036 sq. m. Pop. 528,805.

**Meuse (Dutch, *Maas*).** River of W. Europe. It rises about 16 m. N.E. of Langres, Haute-Marne, flows in a N. direction, for a few miles underground, through the depts. of Vosges, Meuse, and Ardennes, and passes into Belgium at Givet, after a sinuous course from Sedan. At Namur it turns N.E., through a valley between that town and Liège, and enters Dutch territory just S. of Maastricht.

The Meuse or Maas then flows N. and W. until it joins the Waal, a branch of the lower Rhine, near Gorkum, where it becomes the Merwede, and, after passing the marshy tract known as the Biesbosch, enters the North Sea at several points, the chief of its mouths being the Oude Maas, where stands the Hook of Holland, the Haringvliet, and the Grevelingen. Among its tributaries are the Bar, Sambre, Semoy, Lesse, Ourthe, and Roer, and among the towns on its banks are Neufchâteau, Commercy, Verdun, Mézières, Dinant, Namur, Huy, Liège, Maastricht, and Venlo. Navigable up to a point near Verdun, the Meuse

is joined by several canals, notably the Marne-Rhine canal and the Ardennes canal. Its total length is 575 m., 305 m. being in France, 120 m. in Belgium, and 150 m. in the Netherlands. The area of its basin is computed at 12,740 sq. m.

**BATTLES OF THE MEUSE.** Operations in the First Great War took place, Aug. 25-27, 1914, between the French 4th army under Langle de Cary and the German 4th army under the duke of Württemberg. After defeats at Virton-Ardenne, Langle de Cary received orders to establish himself on the left bank of the Meuse and maintain contact with the still retreating 5th army on his left. His front ran from Sassey to Mézières, and here was a 30-m. gap through which the Germans were pouring troops. By Aug. 26 the Germans had bridged the river at Remilly and established a bridgehead S. of Sedan; the French centre was pierced, and they were driven to form a new front along the high ground S. of the river W. of Mézières.

The Germans forced several further crossings, and began a push along the whole Meuse front. A severe check at Noyers drove them to appeal for help to Hausen's 3rd army (not yet identified by the French), which, however, continued to march S.W., threatening the French left. On the 27th Langle de Cary ordered a new attack to drive the Germans back into the Meuse. In the centre he gained ground and the Germans recrossed the river, while on the right the enemy were pushed back towards Olizy. Two corps of the German 3rd army were sent to relieve the badly mauled 4th. Possibly if the French reserves had been put in on Aug. 28, a great victory might have been won. Instead Langle de Cary, in view of Joffre's orders for a retreat, decided to fall back on the Aisne. Casualties on both sides were heavy.

The Meuse figured also in fighting in the Second Great War. On May 11, 1940, German forces crossed N. of the Albert Canal, the waterway forming the main Belgian line of defence in the N. By May 14 they had reached a stretch of the river W. of Liège, and from Namur to Sedan were within reach of the Meuse bridgeheads. The French evacuated Sedan; and a German break through resulted in the turning of the Maginot line. On Aug.

31, 1944, American armoured columns crossed the Meuse at Sedan unopposed, the Germans being in rapid retreat; further crossings followed swiftly. For operations in the Netherlands, see Maas.

**Meuse.** Dept. of France. Contiguous with the depts. of Meurthe-et-Moselle, Vosges, Haute-Marne, Marne, Ardennes, and with Belgium, it is generally hilly, and contains the great forest tracks of the Argonne and the Woëvre. The Meuse flows in a N.N.W. direction through the dept., and other rivers are the Ornain, Aire, Aisne, Chiers, Loison, and Orne. The Canal de la Marne traverses the dept. Cereals, beet, potatoes are grown, and round Bar-le-Duc and Bussy the vine: among industries are quarrying, timber working, and foundries. The capital is Bar-le-Duc, other towns of



Meuse. Sketch map showing dispositions of the opposing armies in the series of battles in August, 1914

mer resort, and has long been engaged in the pilchard fishery. There is a good harbour, and a pier, constructed in 1895. Pop. 1,800.

**Mexborough.** Urban dist. and market town of the W. Riding of Yorkshire, England. It stands on the Don, 5 m. from Rotherham and 11 m. from Sheffield, and has two rly. stns. The chief building is the church of S. John the Baptist, partly Early English. There was a castle here in the Middle Ages. Industries include the making of scissors, bricks, toys, and cardboard; while around are coal mines. Market day, Sat. Pop. 15,856.

**Mexborough, EARL OF.** Irish title borne since 1766 by the family of Savile. The Saviles are a Yorkshire family, and one of them, Sir John Savile, was M.P. for Hedon, 1747-54. In 1753 he was made an Irish baron, and in 1766 earl of Mexborough. John, the 4th earl (1810-99), was M.P. for Gattton before 1832 and afterwards for Pontefract. In 1945 John Raphael Wentworth became the 7th earl. The family estates are in Yorkshire. The earl's eldest son is called Viscount Pollington.

**Mexcala OR MESCALA.** River of Mexico. Rising in the state of Tlaxcala and known as the Atoyac in its upper course, it flows for 435 m. generally W. to the Pacific. In its lower course it takes the name of Rio de las Balsas and separates the states of Michoacan and Guerrero. The swift current furnishes power for textile mills.



Mevagissey. The attractive Cornish fishing town and its harbour

other towns of  
mercy, Verdun,  
Montmédy, Cler-  
mont, Ligny-en-  
Barrois, and Var-  
ennes. The dept.  
suffered severely  
during the First  
Great War, large  
areas round Ver-  
dun being com-  
pletely desolated.  
Area, 2,408 sq.  
m. Pop. 188,786.

**Mevagissey.**  
Fishing town of  
Cornwall, Eng-  
land. 12 m. E. of  
Truro, it is a sum-



## MEXICO: IN ANCIENT & MODERN TIMES

*The reader should consult the articles on the cities, towns, and rivers; rulers, statesmen, and men of letters of Mexico. See Archaeology; Aztec; Maya; also Latin America; North America*

Mexico is a republic of North America, occupying the southern extension of the continent toward Central America. It lies approximately between  $14^{\circ} 33'$  and  $32^{\circ} 43'$  N. lat., and between  $86^{\circ} 48'$  and  $117^{\circ} 8'$  W. long., and has an area of 763,944 sq. m. Mexico is bounded N. by the United States, the Rio Grande del Norte forming the E. part of the N. frontier; on the S.E. it is bounded by British Honduras and Guatemala. It has a coast-line of 1,727 m. on the Atlantic (Gulf of Mexico), and of 4,574 m. on the Pacific side, the length being enhanced on the E. by the peninsula of Yucatan in the S.E., and on the W. by the long, narrow peninsula of Lower California.

About six-sevenths of Mexico consists of a high plateau, continuing that of the S.W. United States, and bordered E., N., and S. by mountains which slope steeply to low coastal plains. The plateau ranges in average elevation from 4,000 ft. in the N. to 8,000 ft. in the S.; the E. bordering mountains (Eastern Sierra Madre) form a broken chain with summits up to 10,000 ft.; the W. (Western Sierra Madre), less broken, have a somewhat greater general elevation; and the S. (Sierra del Sur) range from 7,000 up to more than 11,000 ft.

From the S. part of the plateau itself, a region strongly volcanic, containing craters still active, and subject to earthquakes, a number of peaks rise to much greater heights, e.g. Orizaba (17,400 ft.) and Popocatepetl (17,520 ft.). Elsewhere the surface of the plateau is much broken; it contains several inland drainage basins (*bolson*), notably the Valley of Mexico in the S., including extensive lakes and marshes; and the rivers which escape from it to the sea do so by way of falls and ravines, so that access from the coasts is difficult. The plateau falls S.E. to the low Isthmus of Tehuantepec (170 m. wide), and E. of this the land in-

cludes, on the S. the Chiapas highlands (5,000 to 8,000 ft.), and on the N. the lowland of Tabasco and the Yucatan peninsula.

The largest river on the E. is the Rio Grande del Norte (1,500 m.). The rivers of the plateau are of most service for power where they fall over its edge, but their flow is irregular according to season, and important power establishments have needed the construction of great dams and reservoirs. The streams of the coastal plains are winding and slow; some on the E., like the Pánuco, Papaloapan, Coatzacoalcas, and Grijalva, are used for inland navigation, but their mouths are hampered by bars, or need constant dredging.

The rocks of a greater part of the plateau and the E. Sierra are cretaceous, the W. heights and the S. of the plateau consist mainly of tertiary volcanic rocks. Yucatan consists of sedimentaries of the same period, and the plains have a wide extent of more recent deposits.

The climate is so markedly influenced by elevation that there is a familiar threefold division of the land—(1) the *tierra caliente*, hot land, from the coasts up to about 3,000 ft., with a warm, dry winter and hot, wet summer when temps. especially on the Pacific coast, frequently exceed  $110^{\circ}$  F.; (2) the *tierra templada*, temperate land, from 3,000 to 6,500 ft., free of the excessive summer moisture of the

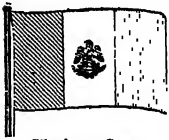
lower levels and the cold winter winds of the higher; (3) the *tierra fria*, cold land, higher than (2). Hard frost is rare except at very high elevations and the designation cold is only comparative, the average temp. being c.  $60^{\circ}$  F. The chief inland towns are in zones (2) and (3); the capital, Mexico City, for example, is in the highest, being situated at an altitude of 7,500 ft. The dry season, over most of the country, lasts from Oct. to May; the wet from June to Sept. Both coastal slopes, especially the Pacific, receive heavy rainfall; but semi-desert conditions exist in the N. and N.W. parts of the plateau and in Lower California.

The average annual rainfall for the whole republic is 60 ins. Trade winds, from N. E. to S. E., prevail on the Atlantic coast, but may be replaced between Oct. and March by the tempestuous "northers." The prevalent winds on the Pacific coast are N. W. in winter, and S. W. to S. E. in summer. Hurricanes are most frequent from Aug. to Oct.

The low coastal plains, behind the bare sand-bars, carry tropical forest, which merges into subtropical and temperate types as the plateau is ascended. The dry N. has a steppe vegetation if any; farther S. the land is fertile. The porous limestone of Yucatan carries a scrubby natural vegetation. Among larger wild animals the puma, jaguar, bear, and boar are found. Poisonous snakes are common, and there are many harmful insects; the mosquito, breeding in the coastal lagoons and marshes, carries malaria and yellow fever.



Mexico arms



Mexican flag



Mexico. Map of the southern republic of North America, showing the railway connexions with the U.S.A. and the Atlantic and Pacific ports

The pop. in 1940 was returned as 19,653,552 and in 1945 was estimated at 22½ million, of whom c. 10 p.c. were of European (chiefly Spanish) descent; c. 15 p.c. pure Indian, of over 50 tribes and dialects; and 75 p.c. mestizos—of mixed European and Indian descent. Of the 160,000 foreigners, c. 12,700 were British; 12,500 Americans; 7,300 Germans; 5,000 French; 5,000 Italians; and 25,000 Spanish-born Spaniards. The general mortality rate is 21·5 per 1,000. The birth rate is high, but so is infant mortality. There are certain other well-marked "colonies," as the Syrians (Maronite Christians), who form a strong trading class in Yucatan.

The most important food crop is maize, from which is made a staple food, the flat cake called *tortilla*. The country is not, as a rule, self-sufficing in either maize or wheat. The *frijol* and other beans are grown and eaten; oranges, bananas, vines, agaves from which the drinks of the common people, *pulque* and *mezcal*, are distilled, sugar and coffee are cultivated for home consumption and export. Fibre plants are specially important; among these, most of all, the henequen or sisal hemp of Yucatan. Cotton is grown in central Mexico; the *guayule* of the north and other wild plants yield rubber, which is also cultivated. Among vegetable gums, the *chicle* of the S.E. lowlands is the basis of chewing gum. Cattle ranching is important in the N. half of the country.

The mineral wealth of Mexico is immense. Silver, gold, copper, iron, lead, and zinc are the most important metals, and coal and salt are found. The richest mineral region, broadly speaking, is the slope of the Western Sierra Madre. The oil fields produce some seven million tons a year; the chief are in the Gulf coast lands, (a) in the south of Tamaulipas State and northern Vera Cruz, behind the ports of Tampico, Puerto Lobos, and Tuxpan, and (b) in southern Vera Cruz behind the port of Puerto Mexico. Unsettled conditions in the country have from time to time interfered with mining operations and the working of the oil fields. Water power, at Boquilla and elsewhere, has been applied to large scale generation of electricity for lighting, heating, and traction in towns, and power in mines and factories.

Among manufactures, there are a few large metallurgical works, e.g. the iron and steel foundries at

Monterey and in Hidalgo. The largest cotton factories are in and about Orizaba, Puebla, and Mexico City; those for wool at Tlalpanpantla. Jute, silk, leather goods, cigarettes, soap, and glycerine are other important manufactures.

Mining and manufacturing were set on foot mostly by foreign organization and capital, but from 1917 onwards Mexican govts. have sought to limit these interests. Foreign companies working Mexico's oil were expropriated in 1938.



Mexico. One of the rural guards wearing the national hat

The chief Atlantic ports are Tampico (for the northern oil fields) at the mouth of the Panuco, Vera Cruz with a good artificial harbour, Puerto Mexico at the mouth of the Coatzacoalcos on the N. side of the isthmus of Tehuantepec, and Progreso in Yucatan, on an open roadstead, from which sisal hemp is shipped. The chief Pacific ports are Salina Cruz on the S. side of the isthmus of Tehuantepec (connected with Puerto Mexico by a trans-isthmus railway), Acapulco, Manzanillo, and Mazatlan.

The rlys. have not been systematically laid out, but, except in certain parts, the country under normal conditions is fairly well served. They have a route mileage of 7,365 m. The main lines were nationalised in 1937.

Main trunk motor roads extend from the U.S. border to Mexico City and to most of the principal cities. That from Laredo, Texas, to Mexico City, 764 m., was opened

1936. Construction of the Mexican section of the Pan-American Highway (*q.v.*) began in 1942. These motor roads follow U.S. standards of road building and are excellent. Air services to S. and Central America were started in 1930; there are also services from Mexico City to Brownsville, Texas, and thence to New York and other U.S. cities, and 111,846 m. of internal airways. There are fairly complete land telegraph and postal systems.

**CONSTITUTION.** Mexico is a federation of 28 states, each, under the constitution of 1917, free in respect of internal affairs. In addition to the states, there is the federal district (Mexico City and a small area round it), and three territories, two forming Lower California, the third being Quintana Roo. The congress of the federation consists of a chamber of deputies, elected for a term of three years, with one member for every 150,000 inhabitants, and a senate with 58 members, two for each state, and two for the federal district, elected for a term of six years. Members of congress are ineligible for re-election until the period of another term has elapsed. The president is elected by direct vote for a six years' term.

The governors of the states are elected, those of the territories and the head of the federal district are appointed by the president. In each state the legislature and judicial authorities are elected by popular vote. Roman Catholicism is the religion of the great majority of the people. Military service in the army or national guard is compulsory. Elementary education is free, secular, and, in theory, compulsory; but 165 regimental schools were set up to combat illiteracy in the army, and in 1946 there were 69,880 centres for the instruction of illiterate civilian adults. There are eleven universities, of which the national university of Mexico city, founded 1553, with 22,259 students in 1944, is the chief; women are admitted.

**ANCIENT HISTORY.** The material remains of early Mexico reflect a succession of dominant peoples, Maya, Zapotec, Toltec, Aztec, who made themselves and their culture felt in varying degrees from the Anahuac tableland to Honduras.

For many centuries before the Christian era the semi-arid tablelands of middle America were occupied by primitive peoples cultivating maize and producing crude pottery and woven fabrics, the humid lowlands being

inhabited by lowlier hunting and fishing tribes. By the 2nd century B.C. there began to emerge in the Maya lowlands an advanced civilization marked by stone sculpture, rubble architecture, pictography, an elaborate calendar system, and complex religious rituals. The similarity of these arts and institutions to some in the Old World, and the lack of organic links between them and the primitive aboriginal culture, have led competent authorities to postulate the arrival by sea of cultural ideas.

#### Maya Monuments

This early Maya civilization, traced back by an inscribed stone object to 100 B.C., lasted until A.D. 600. From 420 onwards northward-moving colonists established in Yucatan new cultural centres, which also decayed shortly after 600, but about 980 experienced a renaissance. The chief sites of the early Maya empire are Tikal, from which there is a stele dated to A.D. 214, Uaxactun, where the date A.D. 50 was identified in 1916, Copan, from which radiate a series of great causeways that can still be traced in the jungle, Lubaantun, with its megalithic masonry. The later Maya period in Yucatan can be studied at such sites as Chichen Itza or Uxmal. Its influence spread northward into the Oaxaca region, where the dominant people was Zapotec. The chief Zapotec sites, Mitla and Monte Alban, show strong Maya influence, but exhibit their own peculiarities, notably sculptured decoration based on textile patterns.

Meanwhile a series of northern, Nahuatl peoples made their way southwards through Mexico. Foremost of these were the Toltec, who were in the valley of Mexico by the 8th century. Some of them later reached Yucatan and took over the Maya cities, where their characteristic sculpture, in particular their serpent columns, can be seen. The last Nahuatl arrivals were the Aztec, a fierce warrior people who established themselves in Mexico in the 14th century and dominated the Toltec and Maya regions at least as far S. as Guatemala. Their art and culture were inferior to those of Toltec and Maya, though they show a certain effective grimness of their own.

*Consult* The Civilization of Ancient Mexico, L. Spence, 1912; A Study of Maya Art, H. J. Spinden, 1913; Mexican Archaeology, T. A. Joyce, 1914; Maya and Mexican Art, T. A. Joyce, 1927; The Civilization of the Mayas, J. E. Thompson, 1927; History of the

Maya, J. E. Thompson and T. Gann, 1931; The Aztecs of Mexico, G. C. Vaillant, 1944; The Ancient Maya, S. G. Morley, 1947.

**MODERN HISTORY.** During the 14th and 15th centuries the Aztecs established their rule over a great part of Mexico, and allied themselves with the kingdom of Tezcuco (near Mexico City), the culture of which was higher than their own. In the reign of Montezuma II (q.v.) Mexico was invaded by the Spaniards under Cortés (q.v.) and conquered in 1519-21. Their first possession in the New World, it was called New Spain and was administered from Madrid, and settlement was carefully controlled. The religious orders carried Spanish authority N. by means of missions, and by the end of the 18th century it extended far along the Pacific coast. The central provinces were the most peaceful part of Spanish N. America.

Napoleon's conquest of Spain in 1808 led in Mexico, as in Spanish S. America, to revolt, and in 1810 there was a rising, in particular against corrupt European officials. It was suppressed, but discontent remained; and in 1821, Iturbide, a former officer in the Spanish army, and ostensibly the leader of the conservative elements, joined with the rebel leader Guerrero in the Plan of Iguala which proclaimed Mexico an independent monarchy. Iturbide reigned as emperor 1822-23, but was then ousted in favour of a republic. Next year a federal constitution was brought into force. Spain abandoned her claim to Mexico in 1829.

#### Reduction in Area

The country at that time was twice as large as it is now; it included the whole of California, and the area now forming the U.S. states of Texas, Arizona, New Mexico, and part of Colorado. In 1836 Texas declared its independence, and in 1845 was admitted as a state of the U.S.A. Frontier disputes led to war between the U.S.A. and Mexico, 1845-48. The Mexicans were beaten and ceded New Mexico and California for a money payment.

In 1855 the Mexican dictator Santa Anna fell, and a period of civil war followed, until the government's repudiation of foreign debts in 1860 brought foreign intervention, and Spanish, British, and French troops landed in 1861.

Napoleon III had a vision of a Franco-American empire, and after the withdrawal of the British and Spanish armies the French took Mexico City in 1863, and in-

stalled a provisional government which in 1864 elected Maximilian, brother of the Austrian emperor, as emperor. On arrival he made a real effort to introduce settled government, but the activities of Juárez (q.v.) in the N. and General Díaz (q.v.) in the S. made his position impossible. The French troops supporting Maximilian were withdrawn in 1866, and in 1867 he was taken and shot. In 1876 Díaz seized power and ruled as autocratic president until 1910, when he was overthrown. His attempts to regain power failing, he resigned in 1911. Under his rule the finances were rehabilitated, guerrilla warfare was put down, and economic conditions improved.

The period which followed the downfall of Díaz was again one of internal warfare, with one leader and then another gaining a temporary supremacy, until 1920 when, in spite of local revolts, a period of reconstruction began, based on the new constitution promulgated in 1917. This guaranteed the rights of labour common in progressive countries; it also declared ownership of the land to be vested in the people, as a result of which, up to 1941, 65,000,000 acres formerly in large estates had been confiscated and let for rent among 1,606,507 peasants.

Mexico broke off relations with the Axis powers in Dec., 1941, and declared war on them six months later. Mexican aircraft took part in anti-submarine work in both the Pacific and the Atlantic; and a Mexican expeditionary air force served with U.S. forces in the Philippines in 1945.

**Bibliography.** History of the Conquest of Mexico, W. H. Prescott, World's Classics, 2 vols.; Mexico and its Heritage, E. Gruening, 1928; Mexico, S. Chase, 1931; Mexico's Cultural History, P. Kelemen, 1937; History of Mexico, H. B. Parkes, 1939; Mexican Mosaic, R. Gallop, 1939; Mexico, J. B. Trend, 1941; Timeless Mexico, H. Strode, 1944.

**Mexico.** Inland state of the republic of Mexico. Bounded N. by the state of Hidalgo and S. by Guerrero and Morelos, it covers an area of 9,230 sq. m., and encloses the greater part of the federal dist. and city of Mexico, which, however, do not form part of the state. The S.E. and central portions are mountainous, the highest summit being the Popocatepetl volcano, but the N. part is relatively flat. There are a few rivers, the principal being the Lerma, and of the lakes the largest is Texcoco in the E. An important industry is stock-raising, and gold and silver mining

is carried on. Cereals, sugar, coffee, and tobacco are cultivated, and manufactures include cotton and woollen goods, glass, flour, and pottery. The national railroads of Mexico serve the state. Toluca is the capital. Pop. (1940) 1,146,034.

**Mexico** or **MEXICO CITY**. City of N. America and capital since 1824 of the republic of Mexico. It lies within the federal district on the plateau of Anahuac, 7,350 ft. alt., and is well served by rly. and by air services both inside Mexico and with neighbouring countries. It occupies the middle of an elevated valley girt by high mts., and the most prominent features of the landscape are the 17,000 ft. volcanoes Popocatepetl and Ixtaccihuatl with their snow-covered caps.

For those suffering from weakness of lungs or heart, the high altitude may prove harmful, but for those in robust health the climate is healthy. The rainfall is 23 ins.; the mean temp. ranges from 54° F. in Jan. to 65° F. in May. Between Nov. and March is the height of the season for tourists.

The city is the most ancient and one of the largest in N. America with pop. (1940) of 1,468,422. It covers an area of nearly 20 sq. m. Laid out for the most part with rectangular avenues and streets, it boasts in the Paseo de la Reforma one of the widest boulevards in the world's cities, with a length of over 3 m. terminating at the foot of the hill of the Grasshopper, on which stands the castle of Chapultepec, residence of the president, towering high above a superb park, famous for its gigantic trees, gardens, and lake.

From the Plaza de la Constitución (also known as the Zocalo, the Plaza de Armas, and the Plaza Mayor), a square covering nearly 15 acres, proceed the main streets, lined with handsome department stores and shops, skyscrapers, and great hotels. The E. side of the Zocalo is occupied by the national palace, built in 1691, which houses various govt. depts. Over the central door hangs the Liberty bell, rung every Sept. 15 by the president in commemoration of the liberation of Mexico from Spanish rule. On the N. side of the Zocalo lies the cathedral, the largest on the American continent, begun in 1572 and completed in 1667; it stands on the site of an Aztec temple. The national museum near by contains a collection of Aztec and Maya relics. Among modern buildings of note are the general post office, the ministry of communications, and the palace of fine arts theatre. The

stadium for sports and the bull ring are large and well equipped.

In what is now the legislative palace the first printing press on the American continent was established in 1536 and still stands. The first American newspaper, the *Mercurio Volante*, was published from this press in 1693. W. of the Zocalo lies the Alameda, another open space of over 40 acres, consisting of a well wooded park, surrounded by hotels, offices, and shops. The residential sections of the city, laid out in American style, extend out into the country; they are reached by good motor roads and a service of electric tramways.

The old quarters retain many of the characteristics of an ancient Spanish city, but the 20th century tendency has been towards the destruction of older buildings.

The present city was founded by Cortes in 1522 on the site of the Aztec capital of Tenochtitlan, which then stood on a number of islands in Lake Texcoco. The subsoil is, therefore, marshy. This has been overcome by laying down vast interlacing steel rafts, on which the modern edifices are anchored. They are thus little affected by the earthquakes, which, however, though frequent, are rarely severe.

**Mexico**, **FEDERAL DISTRICT OF**. Territory acquired by the federal govt. of Mexico for its specific use from the state of Mexico, which encloses it on three sides; on the S. it is bordered by the state of Morelos. It covers an area of 573 sq. m. The city of Mexico and twelve villages are situated within its limits. Pop. 1,757,530.

**Mexico**, **GULF OF**. Great inland gulf or sea, forming a westward extension of the Atlantic ocean. Almost entirely enclosed by land, it has the U.S.A. on the N., Mexico on the W. and S., the peninsulas of Florida and Yucatan constricting the two entrances. It has a greatest length from E. to W. of 1,150 m., a greatest breadth N. to S. of 680 m., and an area of more than 700,000 sq. m. The two channels, the Strait of Florida on the N. and Yucatan Channel on the S., formed by the island of Cuba, are shallow, but the gulf has a depth of more than 2,000 fathoms at a point between the mouth of the Mississippi and the Yucatan peninsula, and reaches a maximum depth of 2,119 fathoms in about 25° 7' N. and 89° 37' W., while the greater part of its expanse has a depth in excess of 1,650 fathoms.

Several large rivers empty their waters into the gulf, the most im-

portant being the Mississippi, Rio Grande del Norte, Colorado, Sabine, Brazos, and Mobile. Apart from the Bay of Campeche there are no pronounced indentations, and the best harbours are Galveston, New Orleans, Mobile, Pensacola, and Tampa, Vera Cruz, Key West, and Havana. The Gulf Stream passes into the gulf through the Yucatan channel and makes its exit by the Strait of Florida, its pressure giving the gulf a temperature of some 8° in excess of that of the open ocean in the same degree of latitude. See Gulf Stream.

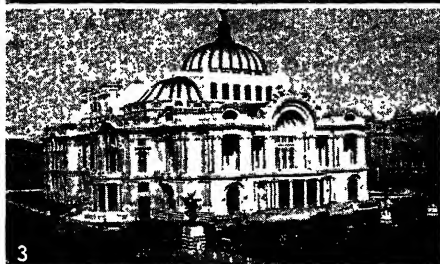
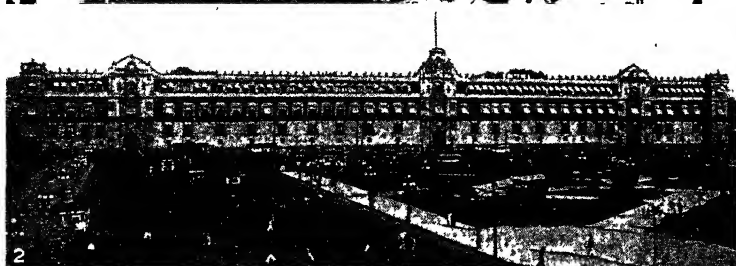
**Meyer**, **FREDERICK BROTHERTON** (1847-1929). English Non-conformist preacher. Born in London, April 8, 1847, he was educated at Brighton and London university. Baptist minister of Victoria Road church, Leicester, in 1874, he was so successful that Melbourne Hall was specially built for him in 1878. Having been from 1888 minister of either Regent's Park chapel or of Christ Church, Westminster Bridge Road, (two periods at each), he retired in 1921. He was twice president of the national federation of Free Churches (1904, 1920), and once of the Baptist Union (1906). Leader of temperance and purity campaigns, he was largely instrumental in 1914 in preventing a boxing match between Jack Johnson, coloured heavyweight, and Billy Wells, British champion. He published Biblical commentaries and *The Bells of Is*, an autobiographical work. He died March 28, 1929.

**Meyer**, **LUKAS** (1846-1902). Boer soldier. A native of the Orange Free State, he afterwards settled in the Transvaal and in 1884 helped to found the republic of Zululand, of which he became president. When this state was united with the Transvaal, he was chosen a member, and later president, of the Volksraad. He held a command in the S. African War of 1899-1902, taking part in the siege of Ladysmith. Meyer died in Brussels, Aug. 8, 1902.

**Meyer**, **MARIE PAUL HYACINTH** (1840-1917). French scholar. Born in Paris, Jan. 17, 1840, he became in 1876 professor of languages and literature of southern Europe in the Collège de France, and in 1882 director of the Paris École des



Lukas Meyer,  
Boer soldier



1. Plaza de la Constitución showing the cathedral, founded in 1573, and the adjoining Sagrario Metropolitano: on left, the Calle Monte de Piedad. 2. National Palace, the seat of government. 3. The National Theatre. 4. La Patria monument on the terrace in front of Chapultepec Castle. The seated female figure

represents the Republic sorrowing for her slain sons; four figures round the shaft typify inhabitants of the Mexican valley in past ages. 5. Column and statue of Independence, erected in 1890. 6 Chapultepec Castle, home of the President. 7. Sacrificial altar of King Tizoc, one of Mexico's rarest treasures, in the National Museum

**MEXICO: BUILDINGS AND MEMORIALS IN THE CAPITAL CITY OF MEXICO**



Chartes. At first Meyer's studies were limited to ancient Provençal literature, but soon extended to all the Romance languages. With Gaston Paris (*q.v.*) he founded the journal *Romania*, devoted to the interests of Romance philology. Died Sept. 8, 1917.

**Meyer, VICTOR** (1848-97). A German chemist, born in Berlin, Sept. 8, 1848. Educated at Berlin and Heidelberg, he became professor of chemistry at Zürich polytechnic, 1872, and succeeded Bunsen in the chair of chemistry at Heidelberg, 1889. He introduced new methods of determining the vapour densities of substances vaporising at high temperatures, and discovered the chemical bodies known as aldoximes and ketoximes. While investigating the impurities in benzol he discovered thiophen and afterwards produced its derivatives. Died Aug. 8, 1897.

**Meyerbeer, JAKOB** (1791-1864). German composer. Born in Berlin, Sept. 5, 1791, the son of a



Jakob Meyerbeer,  
German composer

Jewish banker, his name was Jakob Liebmann Beer. As a child he played the piano in public and then studied with Aht Vogler at Darmstadt.

His powers improved until he became one of the most brilliant pianists of the day, but his mind had already turned to composition. He began with an oratorio, and in 1813 produced his first success, the opera *Almelek*. To develop his talent he spent some years in Italy, and settled in Paris in 1831. His works include the operas, *Robert the Devil*, *The Huguenots*, and *The Prophet*, all effective dramatically but no longer highly valued musically. He died May 2, 1864. *Pron.* Myer-bare.

**Meyerhof, OTTO FRITZ** (b. 1884). A German biologist. Born March 12, 1884, at Hanover, he was educated at Heidelberg and Berlin, lectured at Kiel, 1913-24, and spent 1924-29 at the Kaiser Wilhelm institute of biology. He returned to Heidelberg as professor and director of the Kaiser Wilhelm institute of physiology, but in 1938, as a "non-Aryan," had to leave Nazi Germany. After working in Paris he became in 1940 research professor of bio-chemistry at the university of Pennsylvania. His discoveries concerned the thermic, respiratory, and energy

transformations in the active muscle, and the laws of alcoholic fermentation, culminating in what was called the Pasteur-Meyerhof reaction. He wrote *Psychological Theory of Mental Disturbances*, 1910; *Chemical Activity in the Muscle*, 1930. In 1923 he was awarded, with A. V. Hill, the Nobel prize for medicine, and in 1937 became a foreign member of the Royal Society.

**Meynell, An English hunt.** Its district is in Derbyshire and Staffordshire. Sudbury is about the centre, while Burton-on-Trent, Tutbury, and Uttoxeter are in the area. The hounds belong to the members. The hunt began as a private pack, owned by Hugo C. Meynell Ingram, and named from his residence the Hoar Cross. He hunted the country during 1816-67, and in 1872 the pack ceased to be private property. New kennels were built at Sudbury, and the pack took its present name. *Consult* History of the Meynell Hounds and Country, J. L. Randall, 1901. *Pron.* Mennell.

**Meynell, ALICE CHRISTIANA** (1847-1922). English poet and essayist, born Oct. 11, 1847. Daughter of T. J. Thompson and sister of Lady Butler, the battle painter, she was educated partly in Italy and grew up among literary acquaintance. She married

Wilfrid Meynell in 1877 and engaged with him in what Meredith called "princely journalism." To outward observers her life seemed complete with three interests: a strong R.C. faith, a sensitive, critical study of literature, and her large family. Poems, 1893, made a great success: such pieces as the beautiful sonnet *Renouncement*, *The Shepherdess*, *At Night*, *Christ in the Universe*, have entered many anthologies. Volumes of essays gained her recognition as a firm and independent critic. All her work shows a mind receptive to the spiritual meaning of life, and she was greatly revered by Francis Thompson, Coventry Patmore, and other writers who were her friends. She died Nov. 27, 1922. Last Poems appeared in 1923, and a centenary collection of prose and verse in 1947.

**Meynell, WILFRID** (1852-1948). English writer. A Yorkshireman, he

was born Nov. 17, 1852. From 1870 a Roman Catholic, he married Alice (*v.s.*), daughter of T. J. Thompson, in 1877, and shared with her in such journalistic enterprises as the *Weekly Register*. In *Journals and Journalism*, 1880, he proclaimed an ideal which he consistently



Wilfrid Meynell,  
British author  
*Russell*

followed. His study of Disraeli, 1903, was called an unconventional biography. *Verses and Reverses*, 1912, gives a picture of Meynell himself. In 1943 he was created C.B.E. He died Oct. 20, 1948.

Of the eight children of Wilfrid and Alice Meynell, Viola, who contributes the article on Poetry to this encyclopedia, was a novelist and literary critic. Her books include *Kissing the Rod*, 1937; *Letters of J. M. Barrie*, 1942; *Alice Meynell*, new ed., 1947.

Sir Francis, their youngest child (b. May 12, 1891), publisher, poet, and expert on typography, was knighted in 1946 for services to the board of trade. He founded the *Nonesuch Press* in 1923 and wrote *The Typography of Newspaper Advertising*, 1929.



Sir Francis Meynell,  
British publisher

**Mezen.** A river of N. Russia. It rises in the Komi-Zyrian A.S.S.R., and flows N.W. through Archangel region, R.S.F.S.R., to enter the White Sea by an estuary below the town of Mezen. Its course is some 500 m. The district it drains supports fishermen and breeders of cattle and reindeer.

**Mézières.** Town of France, capital of the dept. of the Ardennes. It stands on both banks of the



Mézières  
arms

Meuse, 47 m. N.E. of Reims, and with Charleville (*q.v.*) on the left bank forms the twin town of Mézières-Charleville. An old fortress, it is also an important rly. centre and has hardware manufactures. It was captured by the Prussians in 1815 and 1871, and in the First Great War the Germans took it in Aug., 1914, and established a headquarters there. An





Mezquit. 1. Branch with foliage and pods. 2. Flower spikes

objective of the Franco-American offensive in the last days of the war, it was reached by the French Nov. 8, 1918, the Germans before they left blowing up mines all over the town, and afterwards bombarding it for 24 hours. Over 700 houses out of 1,000 were destroyed. Pop. approx. 10,000.

**Mezötur.** Town of Hungary. Situated on the Körös, 90 m. by rly. S.E. of Budapest, in the co. of Jász-Nagykun-Szolnok, it is a typical market town of the Alföld, with a municipal area of 160 sq. m.; it trades in wheat, wine, horses, and cattle, and manufactures pottery. Pop. 27,645.

**Mezquit** or **MESQUITE** (*Prosopis*). Genus of trees of the family Leguminosae. Natives of Southern, Central, and Western America, they have sweet twisted pods much used for cattle food. The leaves are twice divided into numerous leaflets. The branches are often armed with spines, and the small green or yellow flowers are clustered in heads or spikes. *P. glandulosa*, in addition to its hard, durable timber, yields a gum like gum-arabic.

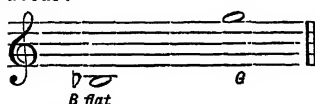
**Mezzofanti**, GIUSEPPE GASPARD (1774-1849). Italian cardinal and linguist. The son of a carpenter, he



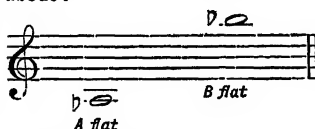
was born at Bologna, Sept. 17, 1774, and in 1797 was ordained priest and appointed professor of Arabic at Bologna, but he refused the oath to the Cisalpine republic. He became professor of Oriental languages, 1803, and librarian, 1815, of Bologna university; keeper of the Vatican library, 1833; and a cardinal in 1838. He died

March 14, 1849. Mezzofanti easily surpasses all other linguists on record. Acquainted with 114 languages and dialects, he spoke at least half that number fluently, composed verses in many, and had a sound knowledge of the chief literatures. *Consult* Life, C. W. Russell, 1858.

**Mezzo-Soprano.** A woman's voice of medium pitch. It possesses something of the full and sympathetic quality of the contralto, but with extended upward range. Its ordinary compass is about:



while exceptional voices will cover about:



*See* Contralto; Soprano.

**Mezzotint.** A process of engraving. A copper or steel plate is taken and the "ground" made thereon by means of a "cradle" or rocking tool, which raises a burr all over. This, if inked and printed, would give a uniform black. To obtain the picture, the highlights are scraped away by a scraper, and then burnished with a burnisher; the middle lights being treated in the same way, though less drastically, and the darkest shadows left intact. In mezzotint, therefore, the process is from dark to light, this being the opposite to other kinds of engraving.

The invention of mezzotint is ascribed to Ludwig von Siegen, an officer in the forces of William VI, landgrave of Hesse; he was the author of an extant mezzotint portrait of Amelia Elizabeth of Hesse, 1642. He communicated his discovery to Prince Rupert, whom he met at Brussels, and the latter introduced the process into England in 1660, and practised it himself with some success. Evelyn's *Sculptura* (1662) credited Rupert with the actual invention, and for nearly two centuries the error remained uncorrected in Great Britain. During the 17th century, Bloteling and other Dutch engravers in London developed the process, the elder John Smith and Richard Earlom continued to popularise it, and in Great Britain it reached the zenith of perfection towards the end of

the 18th century. On the Continent it never really took root.

In England, the decline of painting during the reign of Anne and George I acted as a discouragement to mezzotint, but the latter became again an art of first-class importance with the rise to fame of Reynolds, Gainsborough, Romney, and other English masters, whose manner lent itself specially to reproduction in this medium. James McArdell, J. R. Smith, Valentine Green, S. W. Reynolds, John Jones, and Charles Turner were among the first mezzotinters of this time. The later introduction of steel-faced plates hastened the abandonment of pure mezzotint for a mixed style of mezzotint and line and stipple engraving. Samuel Cousins was one of the best exponents of the mixed method. *See* Engraving.

**Mho.** Unit of electrical conductance. It is equivalent to the reciprocal ohm, hence the spelling. Thus the conductance of a conductor in mhos will be given by the ratio of the current flowing in amperes divided by the potential difference between the ends of the conductor expressed in volts.

**Mhow.** Military station of Indore, Madhya Bharat, India. It is 13 m. S.W. of Indore town, on a height above the R. Gumber near the Vindhya Range. Pop. 30,000.

**Miall**, EDWARD (1809-81). British politician. Born at Portsmouth, May 8, 1809, he became an Independent minister. In 1840 he gave up his charge to begin a campaign against the establishment of the Church. Next year he founded a weekly newspaper, *The Nonconformist*, which he edited until his death, at Sevenoaks, April 29, 1881. He represented Rochdale in parliament 1852-67, and Bradford, 1868-74. *See* Disestablishment; *consult* Life, A. Miall, 1884.

**Miami** or **GREAT MIAMI.** River of Ohio, U.S.A. Rising by several headstreams in the W. of the state, it flows about 140 m., generally S.S.W. The Little Miami, which follows a parallel course, enters the Ohio 5 m. above Cincinnati.

**Miami.** City of Dade co., Florida, U.S.A., on N. bank of the Miami river. In the centre of fruit-farming country, it is the S. terminus of the Florida E. coast rly. A govt. sub-tropical laboratory is here, and there are sponge fisheries. Miami and its dependent resorts cover 90 sq. m.; approximately 2,000,000 visitors are received during the winter season. Its prosperity varies enormously according to national business conditions:

building permits sank to a value of \$2,500,000 in 1932, but rose to \$25,000,000 four years later. The university of Miami emphasises the study of pan-American relations. Pop. 172,172.

**Miami Beach.** City of Florida, U.S.A., in Dade co. A satellite of the mainland city of Miami, Miami Beach is situated 3 m. E. on an island in Biscayne Bay and is connected with Miami (v.s.) by three causeways. Built on mangrove swampland and sand, it is, like its neighbours, noted for garish hotels, lavish private residences, and recreational facilities. It has a permanent population of 28,012.

Miami Beach was incorporated as a town in 1915 and became a city in 1917. Land values boomed here in 1924-25, when people paid as much as 25,000 dollars for sites that were in fact swamp. Prices collapsed after the hurricane of 1926, which swept away much of the boom development.

**Miaskovsky, NICOLAI YOKOVLEVICH** (b. 1881). Russian composer. Son of a military engineer, he was born at Novogeorgievsk, near Warsaw, April 20, 1881, and adopted a military career. In 1907 he resigned his commission to devote himself to music. At St. Petersburg conservatoire he studied with Rimsky-Korsakov and Liadov. His works include some 25 symphonies, two symphonic poems, *Silence* and *Alastor*, an oratorio, *Kirov* is with *Us*, nine string quartets, and songs. He was influenced by Moussorgsky and Borodin in his attention to popular melody and folksong.

**Mica.** A group of minerals characterised by hexagonal symmetry and a perfect basal cleavage. The micas can be split into thin flakes which are flexible and elastic. Chemically they consist of hydrous silicate of aluminium and potassium, with varying proportions of iron, magnesium, sodium, and lithium; some varieties contain chromium and titanium. The principal micas are muscovite (potash-bearing), biotite (potash-iron), phlogopite (magnesia-rich), lepidolite (lithia-mica) and lepidomelane (iron-rich). Colour varies from white muscovite to black lepidomelane; biotite is brown and lepidolite is frequently purplish. Muscovite and biotite are widespread in acid igneous and metamorphic rocks. Most of the micas are mined in India and the U.S.A. Muscovite and phlogopite are extensively used on account of their low electrical conductivity. They



Mr. Wilkins Micawber, the grandiloquent optimist described in *David Copperfield*. From a drawing by Fred Barnard

have low thermal conductivity and are used in furnace windows and as chimneys for oil or gas lamps. Powdered mica is used as a dusting medium in the building and rubber industries; in paints and wall-papers; as a lubricant and a filter. Powdered biotite is employed as a filler coating or medium in the roofing, rubber, and other trades.

**Micah.** One of the minor prophets. A native of Moresheth, near Gath, and a younger contemporary of Isaiah, he prophesied in the reigns of Jotham, Ahaz, and Hezekiah. Of his prophecies the earlier chapters denounce oppression and drunkenness, and predict the ruin of the nations. Then follow Messianic predictions of restoration and future glory. The closing chapters deal extensively with the controversy between God and His people.

**Mica Schist.** In geology, name given to a metamorphic rock having a schistose or foliated structure, and composed chiefly of mica and quartz, arranged in alternate irregular bands. The rock cleaves easily along the mica bands, the latter usually being the colourless muscovite, or biotite varieties of mica. Garnet, tourmaline, etc., frequently occur in the rock, which is widely scattered, being found in the Scottish Highlands, N. America, as well as in many other parts of Europe.

**Micawber, WILKINS.** Character in Dickens's novel *David Copperfield*, often cited as the arch-type of incorrigible optimist, always grandiloquently confident, even in his moments of shabbiest poverty,

that "something will turn up." For the superficial mannerisms of the character, his airy assumption of gentility, his rotund phrases and prolific letter-writing, and his persistent geniality, the novelist took as model his father John Dickens. Sir Herbert Tree appeared as Micawber (doubling the part with that of Peggotty) in Louis N. Parker's stage version of *David Copperfield*, 1914, and W. C. Fields gave a memorable interpretation of the character in the Hollywood film version, 1935.

**Michael** (Heb., Who is like God?). One of the angels in the books of Daniel and Revelation. In Dan. 12, v. 1, he is described as the great prince which standeth for the people (cf. chap. 10, vv. 13, 21). He is thus the champion of the Israelites against the prince-angels of the Persians and the Greeks. In Rev. 12, v. 7, which speaks of there being war in heaven, he is the victorious leader of the good angels (the Archangel) against the Dragon (the old serpent, he that is called the Devil and Satan) and his angels. See Archangel; Michaelmas.

**Michael.** Name of nine East Roman (Byzantine) emperors, of whom the more notable included: Michael I (d. 845) who became emperor in 811. He was defeated by Leo the Armenian and forced to yield the throne to the usurper in 813, retiring to a monastery. Michael II (d. 829) called the Stammerer, ascended the throne in 820. During his reign the Saracens captured Crete and Sicily. Michael IV (d. 1041), called the Paphlagonian, was raised to the throne by his mistress, the empress Zoë, daughter of Constantine VIII, who is reputed to have poisoned her husband in order to marry him. Michael VIII, Palaeologus (1234-82), was proclaimed joint emperor of Nicaea with John Lascaris in 1260. After he captured Constantinople in 1261, he caused Lascaris to be blinded and dethroned, for which crime he was excommunicated by Arsenius. He attempted to bring about a union of the eastern and western churches. Michael IX (d. 1320), son of Andronicus II, shared the throne with his father, but died before him.

**Michael** (1596-1645). First Romanov tsar of Russia. Son of Feodore Nekitich Romanov, he was born June 21, 1596, and was chosen emperor of Russia by a national assembly in 1613. He left the government mainly in the hands of his ministers. The first ruler of the Romanov dynasty, he died at Moscow, July 23, 1645.

**Michael** (b. 1921). King of Rumania. The son of King Carol II and Princess Helena of Greece, he



Michael,  
King of Rumania

was born at Pelesch, Oct. 25, 1921. When his grandfather, King Ferdinand, died on July 20, 1927, he was declared king, as his father, Prince Carol, was in voluntary exile. In 1930 Carol returned to Rumania and supplanted his son. A coup organized by the fascist Iron Guard brought about on Sept. 6, 1940, Michael's second accession to the throne, the real ruler being Gen. Antonescu (*q.v.*), who in turn was subject to German control.

On Aug. 23, 1944, Michael announced the termination of Antonescu's dictatorship and his acceptance of Russian armistice terms. War was declared on Germany. Next year, Marshal Tolbukhin invested Michael with the Soviet Order of Victory. After the war the king attempted to broaden his government, but the Communists made his position difficult. After visiting London to attend the wedding of Princess Elizabeth in Nov., 1947, he returned to Bukarest and on Dec. 30 abdicated, his engagement to Princess Anne of Bourbon-Parma being unacceptable to the government. Michael with his mother left the country, the royal family being deprived of Rumanian nationality and their property confiscated. Michael married Anne at Athens, 1948.

**Michael** (b. 1942). A British prince. Third and youngest child of George, duke of Kent, and Princess Marina, he was born July 4, 1942, and christened Michael George Charles Franklin, the last name given in honour of President Roosevelt, one of his godfathers.

**Michael** (1558-1601). Voivode (governor) of Wallachia, called the brave. Member of the noble family of the Bassaraba, Michael was banished by the voivode Alexander, but deposed him in 1593. He drove the Turks from Wallachia and having come to an understanding with the emperor Rudolf and with the Turks, succeeded in uniting, under his rule, nearly the whole Ruman people, 1599-1600, assuming in 1600 the title of voivode of Wallachia and Moldavia, and governor of Transylvania. Threatened by a rising of the Transylvanians, under Sigis-

mund Bathory, aided by Poland, he obtained support from the Imperial government, and defeated Bathory, but a few days later, Aug. 19, 1601, was murdered at the instigation of the imperial general Basta.

**Michael Alexandrovitch** (1878-1917?). Russian grand duke. Born in St. Petersburg, Nov. 22, 1878, he was a brother of Nicholas II. His marriage, in Oct., 1911, wasmorganatic, and in the following Jan. an imperial manifesto relieved him of the duties of regent imposed upon him in Aug., 1904, in the event of the death of the emperor before the attaining of his majority by the heir apparent. In the First Great War he commanded a division of Caucasian cavalry in Galicia. At the revolution of March 1917, Nicholas II abdicated in favour of the Grand Duke Michael, who was arrested by the Bolsheviks after their accession to power and exiled to Perm, where he was later assassinated. See Nicholas II; Russia.

**Michaelis, KAREN** (b. 1872). Danish author. Born at Randers, March 20, 1872, of a family named Beck-Brøndum, she married the poet Sophus Michaelis, in 1905, and gave up a musical training for literature. She published novels which were translated into several languages. Her work was marked by considerable power of description and a broad outlook on feminine questions. The publication of *The Dangerous Age*, 1910, established her reputation as a European novelist. Later volumes included *Hjertets Vagabond*, 1930; and *Mor* (Mother). She also wrote a number of books for children, of which *Bibi* (6 vols.) became one of the most popular.

**Michaelmas**. Feast of S. Michael and All Angels, Sept. 29. It was instituted in 487. In England it is a quarter day. In the United Kingdom magistrates are usually appointed at or about Michaelmas. Until 1873 the first term of the legal year was Michaelmas term, Nov. 2-25. The custom of eating goose on Michaelmas Day may have originated in the rural tenant's custom of propitiating his lord with a present of a goose at Michaelmas, when the bird is in fine condition, and also perhaps in the lord's distributing his superfluous geese among his friends.

**Michaelmas Daisy**. Popular name for hardy perennial herb more properly termed aster (*q.v.*).

**Michel, CLÉMENT** LOUISE (1833-1905). French anarchist and author. Born in the Château Vroncourt Haute-Marne, April 20

1833, she went to Paris in 1856. Intensely anti-Napoleonic, she joined the Communists, and fought at the Paris barricades but was taken prisoner, and transported to New Caledonia. After release, under the amnesty of 1880, she returned to Paris. For taking part in an anarchist rioting in 1883 she was sentenced to six years' imprisonment, but was released in 1886, and came to London. In the same year she published the first volume of *Mémoires par Elle-Même* (never completed), and *Les Microbes Humains*. These were followed by *Le Monde Nouveau*, 1888. She returned to Paris in 1895, published her work *La Commune*, 1898, and died at Marseilles, Jan. 9, 1905.



Louise Michel,  
French anarchist

**Michelangelo** (1475-1564). Italian artist. On March 6, 1475, was born at Caprese, to the governor of the place, a boy whom he named Michelangelo. The father returned next year to the ancient home of his family, the Buonarroti, in the village of Settignano, overlooking Florence, and there, his foster-mother a stonemason's wife, the child grew up among the stonecarvers. Mallet, chisel, and marble were the toys of his childhood. Early packed off to school in Florence to rid him of vulgar artistic tastes, the thrashings of father and of schoolmaster could not keep the lad from the society of the art students; so that at thirteen, on April 1, 1488, he was apprenticed by his disgusted father to the painter Ghirlandaio, from whom he soon drew the famous plaint, "This boy knows more than I do."

Catching the eye of Lorenzo "the Magnificent" with his first sculpture, the lad was forthwith given rooms in the palace, where he was treated like a son. Living amongst the most famous of the age, the young fellow was soon a prey to his hopeless passion for the beautiful Luigia de' Medici. It was about this time that one of his fellow-pupils savagely struck and broke his nose. On April 8, 1492, his beloved friend and patron Lorenzo de' Medici died; and Michelangelo's boy-companion, the worthless Piero de' Medici, reigned in his stead. Michelangelo left for Venice. Unable to get work, he wandered to Bologna, where a gentleman, one Aldovrandi, befriended the penniless youth.

Michelangelo had now to leave Bologna owing to the threats of the jealous craftsmen of the town; so in the springtime of 1495 he returned to Florence to find the beautiful Luigia dead and a republic established. Though but twenty, he was made a member of the general council of citizens. Called to Rome by a cardinal who had bought his Sleeping Cupid as an antique, the young sculptor hurried eagerly to ride to the goal of his ambitions in the June of 1496; he was soon at work on the superb group of his *Pietà*. Unfortunately the money difficulties of his father and family kept the young artist poor in order to send them constant relief; nevertheless, when at 26, in the spring of 1501, he again entered Florence,



*Michelangelo's bust of David*

Portrait in the Capitoline Gallery, Rome

he was hailed as the first sculptor of his age. Finding a large discarded block of marble, he wrought out of it his mighty masterpiece the colossal *David*.

Summoned to Rome by Pope Julius II in 1505, the young artist eagerly set forth on his second journey thereto. The great Pope Julius II, an extraordinary man, ordered a magnificent monument to himself. Michelangelo's design being too huge to set in S. Peter's church, the pope decided to have the church rebuilt by Bramante on a vast scale. Tricked by the pope over money, Michelangelo took horse in a rage for Florence. "Forgiven" and recalled by the pope in 1508, he rode into Rome for the third time, his heart set on finishing the great sculptures for the Julian tomb, only to find that Bramante and Raphael and others, playing on the old pope's superstition, had maliciously suggested Michelangelo being set in-



Michelangelo. The Holy Family, an early work, painted in tempera, 1501-5  
Uffizi Gallery, Florence

stead to painting the Sistine chapel. Thus it came about that Michelangelo, shutting himself up in the chapel alone, with the fresco dripping on his upturned face, cramped by the terrible fatigue, put himself to the stupendous task, and, four years afterwards, on Nov. 1, 1512, there was revealed to Rome the masterpiece of painting of the Italian Renaissance.

Pope Julius, feeling the end at hand, now ordered Michelangelo to finish the great Julian tomb. Julius, dying four months afterwards, was succeeded by Pope Leo X, a Medici, who ordered Michelangelo instead to Florence to the erection of his great Medicean tomb in honour of the Pope's two brothers lately dead.

Then came the sack of Rome in 1527. Florence shook off the yoke of the Medici, and, Michelangelo, now 52, flung himself into the war of liberty.

But the fall of the city through treachery saw Alessandro de' Medici enter in triumph and Michelangelo a fugitive. However, the anger of the Medicean pope soon cooled, and Michelangelo was torn this way and that by the jealousies rampant over the completion of the two great tombs. Finishing the masterpiece of the Tomb of Giuliano and Lorenzo de' Medici in 1534, he left Florence for ever.

On his reaching Rome for the fourth time, now on the edge of 60, the new pope, the crafty Paul III, compelled Michelangelo to the painting of the vast *Last Judgment*. It was now in his sixties that he met the second woman



Michelangelo. La Pietà: marble group representing the Madonna tending the body of the dead Christ. Executed in 1499, this is the only work ever signed by Michelangelo, whose name appears on the band crossing the breast of the Madonna

S. Peter's, Rome

who was so greatly to influence his life—Vittoria Colonna, the first woman of the age, the inconsolable widow of the Marquis of Pescara, was at forty-two to arouse a strange platonic passion in him.

In 1545, at 70, Michelangelo completed his much modified design of the huge Julian Tomb. The following year, Pope Paul III made him architect to complete the great church of S. Peter that Bramante had planned for Pope Julius II. On the morrow of his taking up the huge task, his romantic friendship with Vittoria Colonna ended with her death.

Family griefs fell fast, but his devotion to his kin bore rich fruit in his old age. Wealthy, frugal of habit, he poured forth vast designs. Sleeping little, working at night, a candle in his cap, at his sculpture, he lived in lonely communion with his own soul. But his vigorous old body could not resist the severe chill which took him to his armchair, where he died a little before five of the clock in the afternoon of Feb. 18, 1564. Michelangelo, with colossal gifts, uttered his age like the giant he was. He claimed to be a sculptor alone, yet as poet, painter, and architect he reached to vast repute—he signed his immortal paintings in the Sistine chapel as Michelangelo, sculptor. He stands forth rugged, stern, honest, uncompromising, virile, as the mighty seer of the Renaissance, like some ancient Hebrew prophet. Over all he wrought is a tragic gloom, for his stern eyes saw the failure of Italy to reach to the splendid realm of Liberty. Entertaining few friends and shunning the society so dear to Raphael, he wrought his solitary art with his own wondrous hands, scorning the courtier ways of Raphael, arrayed in magnificence, and working amidst his crowd of assistants. Michelangelo was the subject of a dramatic poem by Longfellow (1883). Seven of his sonnets were set to music by Benjamin Britten (1940). See Adam; Art; Farnese Palace; Isaiah; Jesus; Moses.

**Bibliography.** Life with trans. of many of his poems and letters, J. S. Harford, 1857; Life and Works, C. Heath Wilson, 1876; Lives, J. A. Symonds, 1899; A. Condivi, Eng. trans., C. Holroyd, 1911; C. Clement, 1930; Lord Finlayson, 1936; C. de Tolnay, 1946.

**Michelet, Jules (1798–1874).** French historian. Born in Paris, Aug. 21, 1798, he was educated at the Collège Charlemagne, and in 1830 became head of the historical section of the royal archives. At this period appeared the first

volume of his history of France (1837–67) which, with the History of the French Revolution (1847–53), gives him a high place among French historians. An ardent democrat, his lectures were prohibited in 1851, and from that time to his death on Feb. 9, 1874, he lived in retirement.

**Michelson, Albert Abraham (1852–1931).** German-born American physicist. Born at Strelno, Prussia, Dec. 19, 1852, he emigrated to America and in 1873 graduated from the U.S. Navy academy, where he became instructor in physics and chemistry. Re-

signing from the navy in 1881, he was appointed professor of physics at the Case school of applied science, Cleveland, Ohio. In 1892 he became head of the physics department, Chicago university, where his researches enabled him to perfect methods for determining with precision the speed of light.

Michelson measured a metre in terms of the light wavelengths. In 1897 he was appointed a member of the international committee on weights and measures. He received the Nobel prize for physics in 1907; the first American to do so.

In collaboration with Professor Morley, he carried out a number of experiments, for which he is chiefly famous, designed to show the relative motion of matter and ether (see Ether, p. 3155). The negative results of these experiments became one of Einstein's chief starting points in the formulation of his theory of relativity (*q.v.*). Michelson's name is also associated with a type of optical interferometer. He published *Velocity of Light*, 1902; *Light Waves and Their Uses*, 1903; and *Studies in Optics*, 1927. He died May 9, 1931.



Michelangelo. Tomb of Giuliano de' Medici, who is represented as a general of the Church. On the sarcophagus are figures of Day and Night. The monument inspired Swinburne's sonnet, In San Lorenzo Church of S. Lorenzo, Florence

**Michigan.** Lake of the U.S.A. The second largest of the five great lakes of North America. Entirely within the U.S.A., it is 320 m. long, has a mean breadth of 65 m., and covers an area of 22,400 sq. m. It lies 581 ft. above sea level, and its greatest depth is 860 ft. The lake, which has few large indentations apart from Green Bay and Grand Traverse Bay, has low, sandy shores, and navigation is rendered dangerous by heavy winds and the absence of good harbours. Communication with Lake Huron is provided by the Strait of Mackinac and with the Mississippi river by the Chicago Drainage Canal. The only islands are a group in the N., the largest of them being Manitou, 50 m. long, and the chief streams entering the lake are the Manistee, Muskegon, Menominee, and Fox. The trout, salmon, and other fisheries are important. Chicago, Milwaukee, Manistee, and Sheboygan are among the cities on the shores of the lake.

**Michigan.** Northern state of the U.S.A., known as the Peninsula State, from its division by Lake Michigan into two peninsulas. The N. peninsula is traversed by low

mountains, and is rich in minerals; the S. peninsula is hilly in the N. with a prairie expanse towards the S. Thousands of small lakes break the surface, while the Muskegon, Grand, Kalamazoo, and many other rivers supply much water-power for the various industries, but are often unnavigable. Maize, wheat, potatoes, hay, and sugar-beets are extensively cultivated, and iron and copper mined.

The iron ore is chiefly a rich red and brown haematite mostly obtained from the Marquette range in the N. peninsula, and the copper is chiefly drawn from Keweenaw Peninsula on Lake Superior; silver, salt, coal, Portland cement, building-stones, and glass sand are also worked. Rural districts and small towns are prosperous; the development of the Ford Motor co. at Detroit provides one of the most striking developments of modern industry in the U.S. It has 6,984 m. of rly. Michigan was admitted to the Union in 1837. Two senators and 13 representatives are returned to Congress. One of its most prominent senators during and after the Second Great War was A. Vandenberg (*q.v.*). Lansing is the capital, and Detroit the chief city. Area 96,720 sq. m., of which 39,698 sq. m. are inland water. Pop. 5,256,106. *Consult* Michigan, ed. G. N. Fuller, 1939.

**Michigan City.** City of Indiana, U.S.A., in Laporte co. It is on Lake Michigan, 55 m. by rly. E.S.E. of Chicago, and is served by the Lake Erie and Western and other rlys., and by lake steamers. The seat of a protestant Episcopal bishop, it contains the Northern Indiana state prison. It is mainly a summer resort, and its population increases by several thousands in the holiday months. Its main industries are fishing and the manufacture of metal products including bicycles, and of clothing. Michigan city was organized in 1832, incorporated in 1837, and chartered as a city in 1867. Pop. 26,476.

**Michoacan.** Maritime state of Mexico. Bordered S. by the Pacific, and covering an area of 22,874 sq. m., it is generally mountainous, the N. portion belonging to a great plateau, and the S. portion, which slopes away to the sea and the Mescala or Balsas river, consisting of a series of wooded mt. chains and productive valleys. It is watered by the rivers Lerma and Balsas and several smaller streams, and contains a number of large lakes, the principal being the Cuitzéon and Patzcuaro, and part of Chalapa. Cereals, sugar, coffee,

and tobacco are cultivated, and gold, silver, lead, iron, and coal are mined. There are good roads to Mexico City and Guadalajara. The capital is Morelia. Pop. 1,182,003.

**Mickey Mouse.** Film cartoon character. Devised by Walt Disney (*q.v.*) while working on a series of film cartoons about Oswald the Rabbit, Mickey made his début in Steamboat Willie, 1928, the first film cartoon to be synchronized with sound, though Disney had already made two silent Mickey pictures. In 1929 Disney produced his first musical Mickey cartoon, The Opry House. The Chain Gang, 1930, introduced Mickey's dog Pluto. The first Mickey Mouse and Donald Duck (*q.v.*) colour cartoon, The Grand Concert, was produced in 1935. By Dec., 1947, Mickey had been the star of 188 short productions, and appeared in two full-length films: Fantasia, 1941, and Fun and Fancy Free, 1947.

**Mickiewicz, ADAM** (1798-1855). Polish poet. He was born near Novogrodek, Lithuania, Dec. 24, 1798, and educated at the university of Vilna. In 1824 he was arrested as a political suspect, and banished to the interior of Russia. He formed a friendship with Push-

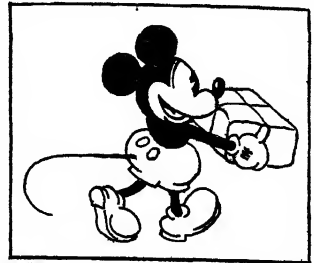


Adam Mickiewicz,  
Polish poet

kin, and wrote a series of beautiful sonnets on the Crimea, which he visited in 1825. He composed several epics, including Dziady, 1823-27, Grażyna, 1827, and Konrad Wallenrod, 1828. Permitted in 1829 to travel abroad, Mickiewicz, after meeting Goethe at Weimar, went to Rome, where he wrote the epic Pan Tadeusz, his finest work, published in 1834 (Eng. trans. 1886).

After further wanderings, Mickiewicz settled in Paris as professor of Slavonic literatures at the Collège de France, 1840-44, but was dismissed for political propaganda in his lectures. In 1848 he helped to organize the Polish legion in Italy. Sent by Napoleon III to Constantinople to form Polish regiments for the Crimean War, he died in that city, Nov. 26, 1855. *See* Works, 8 vols., 1858; *Life*, by M. M. Gardner, 1911. *Pron.* Misk-eyvitch.

**Micmacs** (allies). North American Indian tribe of Algonquian stock. Inhabiting, at the discovery of America, Nova Scotia and ad-



Mickey Mouse. Walt Disney's famous film character

Courtesy of Walt Disney Productions  
jacent regions, three of them were taken to England by Sebastian Cabot in 1497. They were the most primitive, because the most isolated, of the eastern Algonquins (*q.v.*). They number some 3,000.

**Microamp.** A unit of electrical current. It is equal to one-millionth of an ampere.

**Microbar.** Unit of pressure. It is equal to one degree per sq. cm. The normal atmospheric pressure is  $1.013 \times 10^6$  microbars.

**Microclimate.** Term applied to the modifications which are experienced in the general climate owing to the influence of local factors. Climatic variations may be considerable, even over distances of a few hundred yards, and can be caused by differences of soil or grass cover, the effects of vegetation, the emission of smoke from factory chimneys, the presence of land or sea breezes, etc. The climate of a city often differs markedly from that of the surrounding rural districts. Microclimatological investigations have come to the forefront in agriculture, where the actual meteorological conditions to which the growing plants and crops are subjected are recognized as being of vital importance. *See* Climate; Frost; Meteorology.

**Microcline.** A common mineral in the granitic rocks. It is a member of the feldspar group and has the same composition as orthoclase (*q.v.*), potassium aluminium silicate, but shows different crystal form, being triclinic. It occurs as white to pinkish grains and crystals in granites, pegmatites, and feldspathic sandstones. The bright green variety known as amazon stone is used in ornamental work and jewelry. In common with other feldspars microcline has uses in the ceramic industry. *See* Feldspar.

**Microcosm** (Gk. *mikros*, small; *kosmos*, world). Term applied by the mystics of the 17th century to man as the world in little, the spiritual mirror of the macrocosm,



the great world or universe. The movements of the life of the microcosm were supposed to correspond exactly with the movements of the life of the macrocosm. Microcosm is the title of a philosophical work by Lotze (*q.v.*). See Universe.

**Microcosmic Salt.** Hydrogen ammonium sodium phosphate,  $\text{NH}_4\text{NaHPO}_4 \cdot 4\text{H}_2\text{O}$ . Its composition was investigated by Marggraf, and subsequently by Proust. It was made originally from urine, but is now prepared by mixing hot strong solutions of ammonium chloride and sodium phosphate. It is a crystalline body which melts to form a glassy mass of sodium metaphosphate, and is largely used in blow-pipe work for dissolving metallic oxides.

**Microfarad.** The practical unit of electrical capacitance. It is equal to one-millionth of a farad.

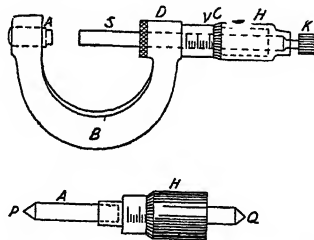
**Microfilm Recording.** Photographic process by which documents are copied on to continuous lengths of film up to 100 feet in length and either 16 mm. or 35 mm. in width. Automatic cameras employing electric or pneumatic mechanism are employed, a single movement switching the lights, opening and closing the shutter, and winding on the film ready for the next exposure. For certain classes of work, apparatus has been designed which can be operated by office staff with a minimum of training. The system is increasingly being used for the duplication of books, manuscripts, music, newspaper files, cheques, insurance policies, and business records of all kinds. It has brought about great economy of storage space, *e.g.* the contents of four large ledgers can be copied on to a roll of film contained in a can 4 ins. in diam. and less than 2 ins. deep. During the Second Great War many valuable and historical documents (including parish registers) were copied by this process, and the films sent abroad for safe keeping. The films, which are usually processed by the makers, may be projected for reading in special cabinets, or photographic enlargements may be made from them.

**Microhm.** Electrical term. It is one millionth of an ohm, and is the practical unit of resistance.

**Micrometer** (Gr. *mikros*, small; *metron*, measure). Engineering instrument. In modern engineering practice very fine limits of measurement are necessary in a number of cases, *e.g.* where cylindrical articles are finished to size by grinding. Such measurements are made to the nearest 0.001 in. and

sometimes to the nearest 0.0001 in. An instrument for making such measurements is a micrometer.

A type of micrometer used for measuring external dimensions is illustrated. At one end of the body B is fitted the anvil A, which can be adjusted slightly for zero read-



Micrometer. Diagrams illustrating types used for measuring (top) external and (bottom) internal dimensions. For explanation of lettering, see text

ing. For measurements in inches the screw S has 20 threads per inch, so that one turn of S represents 0.05 in. The head H, which is attached to and moves with the screw, has its edge C equally divided into 50 divisions. Thus a movement of one division on the head represents a longitudinal movement of 0.001 in. of the screw. A vernier V on the nut D enables a movement of one-tenth of one of the divisions on C to be read, so that readings to 0.0001 in. can be taken. In order to avoid upsetting the reading by application of excessive pressure the head is turned by the knurled extension K, which is arranged to slip when a pre-determined light pressure is exceeded.

The length of the scale on D rarely exceeds 1 in. and is frequently less. Any size of gap can be used, however, provided that a standard block of certified length is used for setting the micrometer. In this case the screw is set to zero and A is adjusted to fit the block. For internal measurements the distance PQ is adjusted by a similar micrometer screw and head H. Different lengths of A can be used according to requirements, the zero being checked with an external micrometer.

Another form of micrometer, generally used for checking variations in size, consists essentially of a flexible diaphragm enclosing a quantity of coloured fluid which communicates with a capillary tube. The size of the tube is chosen so that a movement of 0.001 in. of the diaphragm produces a rise of 1 in. in the capillary tube, so that variations as small as 0.0001 in. are easily detected.

**Micron** is a unit of length equal to  $10^{-6}$  metre or  $10^4$  Angstrom units. The wavelengths of the yellow lines of the sodium spectrum are 0.5890 and 0.5896 micron.

**Micronesia** (Gr. *mikros*, small; *nēsos*, island). Collective name of several groups of small islands in the Pacific Ocean. They are situated between the equator and lat.  $20^\circ$  N. and long.  $130^\circ$  to  $180^\circ$  E. The chief are the Ladrone, Caroline, Marshall, Gilbert, and Pelew Archipelagos, all separately described. Politically they were apportioned among Great Britain, the U.S.A., and Germany, but after the First Great War the islands belonging to the latter came under mandate to Japan. For conditions during and after the Second Great War, see entries for each group.

**Micronesian.** Term denoting the inhabitants of the diminutive islands N. of Melanesia in the W. Pacific. First occupied by a Papuan, then by an Indonesian immigration, this group was afterwards affected by other racial and cultural influences, especially Malayan, Japanese, and Samoan. Micronesians are slenderer, shorter, darker, hairier, and longer-headed than the Polynesians. Local forms of dress and equipment, the semi-divine status of the chiefs, and the veneration of stone pillars, sometimes stone-circled, are reminiscent of a megalithic domination.

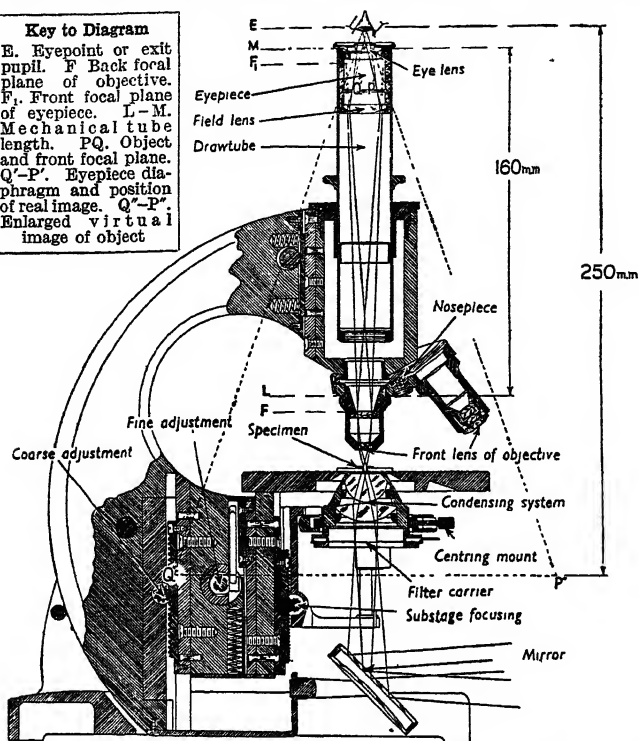
**Microphone.** An instrument for the conversion of sound energy into electrical energy. The original instruments were termed transmitters, such as in the original Bell system of telephony where an iron diaphragm placed in the field of a magnet caused currents to flow in the coils surrounding the magnet when sound waves vibrated the diaphragm. These electric currents were then conveyed by wires to the receiver, or ear-piece, which was of similar construction. The fluctuations caused variations in the strength of the magnet and these variations vibrated the diaphragm so that it generated sound waves similar to the originals.

This simple transmitter, or microphone, was useful only over short distances as it operated only with its own weak generation of electrical energy.

Professor Hughes began investigations in 1878 in the use of the carbon microphone, which acts fundamentally as a relay for controlling an existing source of electrical energy. The vibrating diaphragm, made of iron alloy, in contact with carbon granules packed into a small cavity, causes

**Key to Diagram**

E. Eyepoint or exit pupil. F Back focal plane of objective. F'. Front focal plane of eyepiece. L-M. Mechanical tube length. PQ. Object and front focal plane. Q'-P'. Eyepiece diaphragm and position of real image. Q''-P''. Enlarged virtual image of object



**Microscope.** Tracing the path of rays through a modern microscope fitted with below stage controls, and for binocular or monocular use

Courtesy of G. Baker

the granules to vary their contact resistance to an electric current passing through them. The circuit comprises a battery, microphone, transmission line, and the ear-piece, the latter being of a magnetic type. Such forms of microphone are still used in Post Office telephones but with great improvements in detail. They are not, however, suitable for the transmission of wide bands of frequencies, such as are needed for converting complex musical sounds into electric currents.

Moving coil microphones can give excellent quality transmission. A very light and freely suspended diaphragm has a coil fitted to its centre; this coil is positioned in a circular gap between the pole-pieces of a powerful permanent magnet. Sound waves vibrating the diaphragm cause the coil to cut the magnetic lines of force in the gap so that currents are generated in the coil and these may be fed to amplifiers for magnification. Other forms of microphones employ very light ribbons of aluminium which act both as a diaphragm and the conductor in which the current is generated, while a further type

employs piezo-electric crystals which generate a voltage across their faces when subject to varying mechanical pressure.

**Microphotography.** The process of photographing books, documents, etc., page by page on small-sized film, in order to provide records or duplicates at low cost and in a compact form. It is sometimes confused with photomicrography (*q.v.*).

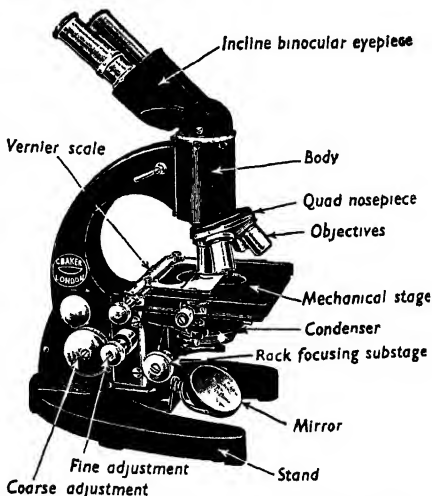
**Micropyle.** Small aperture left in the integument of an ovule which facilitates the approximation of the male gamete to the female. In gymnosperms the drying of a drop of liquid secreted for that purpose draws the pollen grain into the micropyle; in angiosperms the pollen tube grows into it.

**Microscope** (Gr. *mikros*, small; *skopein*, to look at). Optical instrument for the ex-

amination and magnification of small objects. In its simplest form, that of a single lens (*q.v.*), it is very ancient, for the phenomenon of magnification by a curved transparent disk of material must have been noticed in the earliest times. But the high-powered compound microscope is a comparatively modern invention.

Early observers found that the single lens gave a coloured and distorted image, and it was not until the invention of the achromatic lens (*q.v.*) by Chester Moor Hall, 1729, and John Dollond, 1752, that any great advance was made in the use of the instrument. The theoretical researches during 1873-81 of Professor E. Abbe, combined with the practical skill of the German glass-maker Dr. Schott, brought about an enormous increase in the powers of the microscope and laid the foundation of modern microscopy. Sir Almroth Wright and J. J. Lister, the father of Lord Lister, also carried out researches that did much to discover the principles of the modern scientific microscope.

The simplest form of microscope consists of a magnifying lens at one end of a tube and another lens at the other end, serving as an eyepiece. All modern microscopes are constructed on this principle, the two simple lenses being replaced by two complicated systems of lenses. The system nearest the object being examined is called the objective, and that nearest the eye, the eyepiece. The objective is the more important part, and may consist of a large number of lenses



**Microscope.** An inclined binocular tube microscope, showing the main components

Courtesy of G. Baker

of varying powers and properties according to the type of microscopic work being undertaken. Its function is to collect the rays of light from the object and bring them to the focal image.

The strain on one eye of examining objects with a microscope is very great, and in 1860 F. H. Wenham designed a binocular microscope with two tubes and two eyepieces, which has considerably lessened the strain of the work. The light rays from the objective are split up by a prism, and the two images combined to give what is known as stereoscopic vision.

With the improvement in the composition of the glass used in microscopes there came a very great improvement in the definition of the image obtained. With the discovery of the way to make lenses out of molten quartz it became possible to construct a microscope which could be used with ultra-violet light and enable objects to be examined that are only one-240,000th of an inch in diameter. Further advancements in microscopy have been made in recent years by the use of polarised light, enabling objects one-sixth of a millionth of an inch in size to be examined; by a system of phase-contrast microscopy whereby extremely transparent objects are rendered clearly visible without staining; and by fluorescence microscopy in which advantage is taken of the properties of certain dyes to shine under the action of ultra-violet light. Recent British work on a reflecting microscope built on the principle of a reflecting telescope shows promise of a resolution far in advance of that which is possible with the ordinary light microscope. The combined use of the microscope and the time lapse cine-camera, where extremely slow growth processes in tissue cultures are speeded up many hundreds of times, holds out possibilities of the study of the ultimate constitution of living matter that may have a revolutionary effect on the progress of mankind. See *Achromatic Lens*; *Electron Microscope*; *Lens*; *Metallography*; *Optics*.

**Microscopical Society.** ROYAL. British learned society, founded in 1839. Its objects are to promote microscopical and biological science by discussion and publication of matters pertaining to the microscope, especially improvements in its construction and application to biological and industrial research. The soc. publishes a quarterly journal. Its h.q. are at B.M.A. House, Tavistock Sq., London, W.C.1.

**Microstructure.** The appearance of a metal or alloy when viewed through a metallurgical microscope. Specimens are usually prepared by careful polishing of a flat surface of the part of the sample which is of particular interest. If this is examined under vertical illumination, a smooth, mirror-like surface is seen. But if the top surface is removed by etching with suitable acids or salts, the structure of the metal crystals themselves can be discerned. The experienced metallurgist can obtain a very good idea of the type of metal, its method of manufacture, and the properties to be expected, in a sample the microstructure of which he has examined. See *Etching*; *Metallurgy*; *Polishing*.

**Microtome** (Gr. *mikros*, small; *tomē*, cutting). Instrument for cutting thin sections of organic tissue, etc., for microscopic examination. The substance to be cut is either frozen in gum, etc., or embedded in paraffin or celloidin, which enables slices of any thickness between 0.01 mm. and 0.005 mm. to be obtained.

The instrument comprises a razor or a knife-edge which may itself move or remain stationary: in the latter case the specimen to be sliced slides over the cutting edge. In the Cambridge rocking microtome, the substance to be cut is embedded in paraffin contained in a tube, which can be advanced towards the cutting edge in accordance with the thickness of the specimen required, the degree of movement of the tube being read off on an arc graduated in thousands of a millimetre.

**Microwaves.** Term used in electricity. It refers to electromagnetic waves of length 30 cm. down to 1 cm. or less, the corresponding frequencies being 1,000 and 30,000 megacycles per sec. respectively. Microwaves may be generated by magnetron and velocity-modulated (klystron) valves.

**Midas.** Legendary king of Phrygia. Having done a favour to Silenus, the companion of the god Bacchus, he was told by the god that whatever he asked of him would be granted. Midas asked that whatever he touched should be turned into gold. Finding that even his food turned to gold before it reached his lips, he asked Bacchus to revoke the gift. By command of the god he bathed in the springs of the river Pactolus, and the baleful power left him; from that time onwards the river was noted for its golden sands. Midas was once chosen to decide in

a contest on the flute and the lyre between Pan and Apollo. Midas having decided in favour of Pan, Apollo changed the king's ears into those of an ass. Midas successfully concealed the deformity from everyone except his barber, who was so oppressed by the secret that, to relieve his feelings, he dug a hole into the ground and whispered into it the words "King Midas has the ears of an ass." From here grew up a reed which, when moved by the wind, divulged the secret to the world. Midas was the name of many kings of Phrygia. *Pron.* My-das.

**Middelburg.** A town of the Netherlands. Capital of the prov. of Zeeland, it stands nearly in the centre of the island of Walcheren, 4 m. by rly. N.N.E. of Flushing. The industries include engineering,



Middelburg, Walcheren. The Oost Kerk, one of the principal churches (pre-war)

and furniture and tobacco making. The town is encircled by a strip of water known as the Vest. The abbey of S. Nicholas, founded in 1106, and once a Premonstratensian house, was used for administrative purposes, until its destruction by German dive-bombing in May, 1940, when much of the rest of the older part of the town was also flattened. Middelburg, like most of Walcheren, is below sea level, and from the breaching of the sea dykes by the R.A.F. in October, 1944, until their closing a year later the tide washed in and out of the houses of the town, which, however, was never abandoned. In the Middle Ages Middelburg was a cloth centre. Pop. 18,389.

**Middelburg.** A town in the Transvaal, S. Africa. It is 95 m. by rly. E. of Pretoria. Near by are extensive coal-mines. It is a growing trading centre with rly. connexion to Pretoria, Johannes-

burg, and Lourenço Marques. Middelburg district is a large area bounded N.W. by the Olifants River. Pop. 7,995. There is another Middelburg, a town in Cape Province, 91 m. from Graaf Reinet.

**Middelharnis.** A village and commune of the Netherlands, in the island of Goeree and Overflakkee, prov. of South Holland. It is the village visible in the distance in Hobbema's famous picture, *The Avenue*, in the National Gallery, London (see Hobbema illus.). Pop. c. 5,000.

**Middle Ages** OR **MEDIEVAL PERIOD.** Name given to the ten or eleven centuries beginning with the 5th of our era, and ending with the 15th—the centuries intervening between what are called ancient and modern times. Definite dates for the beginning and the end of the Middle Ages can only be assigned arbitrarily; those most in favour are the sack of Rome by Alaric the Goth, 410, or the deposition of the last Roman emperor in Italy, Romulus Augustulus, 476, and the capture of Constantinople by the Turks, 1453, or the discovery of America by Columbus, 1492. The essential facts are that early in the fifth century the old Roman civilization of Western Europe was submerged by the barbarian flood of Teutonic invasion; a new civilization gradually emerged in a new Europe; and then the new Europe awoke gradually to fresh intellectual ideas, and suddenly to the existence of a whole new world outside itself.

The Middle Ages again fell into two main periods, roughly known as the Dark Ages and the Age of Chivalry, separated by the epoch of the Norman expansion in the second half of the 11th century and the opening of the prolonged contest between the empire and the papacy. Some writers restrict the term Middle Ages to the Age of Chivalry. See Feudalism; History.

**Middle Class.** Phrase in loose common usage in Great Britain for that section of the community between the nobility and the "working classes." It is sometimes divided into the upper and lower middle classes, but the dividing line is apt to be drawn differently according to the status of the person drawing it. The middle class embraces the majority of the professional, mercantile, and "black-coated" clerical workers, also the decreasing rentier group. It was once claimed as a characteristic of members of the middle class that they

expended more effort than others in keeping up an appearance of gentility and respectability in dress, deportment, speech, morals, and culture; but the distinction between class and class being, especially since the First Great War, fluctuating and nebulous, the numerical strength of the British middle class cannot be estimated. The alternative appellation, *bourgeoisie*, is nowadays generally used in a derogatory sense. See Bourgeois.

**Middle Congo** OR **MOYEN CONGO.** Administrative dist. of the Belgian Congo, Africa. The Inkisi, Kwango, Kasai, and Congo constitute the greater portion of its boundaries; in the S.W. it is crossed by the railway from Kinshasa through Madimba towards Matadi. See Congo, Belgian.

**Middle East.** Popular political and geographical division of the East. This somewhat vague term is used to denote that part of Asia which includes India, Afghanistan, Persia, Iraq, and Arabia. A Middle East Command was established during the Second Great War with H.Q. at Cairo. At one time or another it controlled forces in E. and N. Africa, Palestine, Syria, Persia, Aden, and Transjordan. After the war the command was designated Middle East Forces, which was changed to Middle East Land Forces in Aug., 1946.

**Middle Lamella.** A term used in plant anatomy for the middle layer of a cell wall which is often apparent in sections as by reason of optical or staining properties differing from those of the rest of the wall. It is the persistent though often chemically changed primary wall originally consisting of pectic material which was initiated in the cell plate separating two recently divided nuclei. See Cytology.

**Middleman.** Term used somewhat loosely to denote a wholesaler or other trader who intervenes in the chain of distribution between the producer and the retailer or the manufacturer and the user. Thus, wine may be bought by A from the producer P, sold to an exporter B, sold by him to an importer C, in turn sold by him to a merchant D, who may sell it to a retailer E, who finally sells it to the consumer F. The intervention of such middlemen as A, B, C, D, and E naturally increases the final price; but most of them, such as B, C and E perform a specialised function, and may do so at a lower cost

than would otherwise be incurred. It does not follow that if a manufacturer sells direct to the public and thus eliminates two middlemen, the wholesaler and the retailer, he will thus complete the chain of distribution more cheaply than the specialised wholesaler and retailer would have done. Opportunities for middlemen may be lessened by (a) government regulation of prices and of profit margins (that is, the percentages that may be added to cost at each stage when fixing the selling price) for the manufacturer, the wholesaler, and the retailer; (b) direct selling by manufacturers to retailers or to consumers; (c) government rationing and control of commodities (this may encourage the activity of middlemen in the "black market," i.e., illicit trading). Sometimes brokers and commission agents are included in the term middlemen.

**Middlemarch.** A novel by George Eliot, originally published in eight parts, 1871-72, with the sub-title, *A Study of English Provincial Life*. It is a story mainly of a modern S. Theresa, Dorothea Brooke, who first, from zeal rather than love, marries the stiff, scholarly, middle-aged egoist, Casaubon, and later his cousin and opposite, Will Ladislaw. Other romances are interwoven with hers.

**Middlesbrough.** Co. borough and manufacturing town of the N. Riding of Yorks, England. It



Middlesbrough arms

stands on the S. side of the Tees estuary, and is 3 m. E. of Stockton and 238 m. by rail from London. The chief buildings are those erected for municipal purposes, including the town hall, royal exchange, museum, art gallery, etc. There is also a R.C. cathedral. Middlesbrough is the commercial centre of the coal and ironstone mines of the Cleveland district, and it contains numerous foundries, furnaces, and other works for the production of iron and steel on an enormous scale. Transport facilities by rail, road, and sea are available, and the Tees is spanned by a transporter bridge and a vertical lift bridge, both of unusual design necessitated by the low-lying banks of the river. The docks can accommodate ships of up to 13,000 tons. During the Second Great War Middlesbrough was several times attacked from the air, the raid of



Middlesbrough, Yorkshire. The town hall of this North Riding industrial centre

May 25, 1940, being the first attack on an industrial target in England. In later raids considerable damage was done.

Middlesbrough returns two M.P.s. Pop. est. 140,470.

**Middlesex.** County of England. Wholly inland, its area is 232 sq. m. On the S. the Thames separates it from Surrey, as on the E. the Lea separates it from Essex. Other rivers are the Crane, Colne, and Brent. The surface is fairly level, although there is a range of hills in the N., and the soil is fertile. Brentford is the co. town, but much of the business is done in London. Middlesex is in the London area as represented by the metropolitan police district and that of the central criminal court. Save for a small and decreasing rural area in the W., it is covered with dormitory suburbs, modern factories, and by-pass roads. The boroughs are Acton, Brentford and Chiswick, Ealing, Edmonton, Finchley, Hendon, Hornsey, Southall, Southgate, Tottenham, Twickenham, Wembley, Willesden, Wood Green. From 1950 two county and 26 borough members were returned to parliament. Middlesex is in the diocese of London, except for a small portion in that of Oxford. It contains Hampton Court, Harrow and Mill Hill schools, and Wembley stadium. It is still, as at the time of Domesday, divided into six hundreds.

Middlesex, so named because it was between the E. and the W. Saxons, is one of the older English counties. At the time of Domesday it was largely a forest area, and a little later was held by the citizens of London. In 1888 about 50 sq. m.

was taken away for inclusion in the new county of London. Pop. 1,628,728.

**LITERARY ASSOCIATIONS.** One of the earliest humorous poems in English is the 14th century skit upon knightly tournaments, *The Tournament of Tottenham*. In the Elizabethan drama are two plays with their scenes laid in Edmonton, the anonymous *Merry Devil of Edmonton*, and Dekker's *Witch of Edmonton*. It also figures in Cowper's ballad of John Gilpin. Drayton in *Polyolbion* sings of the fine cornlands where now are London's outer suburbs. Pope laid the scene of *The Rape of the Lock* in Hampton Court. Akenside found inspiration in *Golder's Hill*. Scott describes *Enfield Chase* in *The Fortunes of Nigel*.

Recollections of Enfield inspired a large part of Keats's poem, *I Stood Tiptoe upon a Little Hill*. Hood wrote of the work of a Bedford topiary artist in his poem, *The Two Peacocks*. Cobbett has passages on Middlesex in *Rural Rides*.

Dickens describes Bill Sikes on burglary intent as taking *Oliver Twist* by Isleworth, Hampton, and Shepperton; Thackeray, in memory of his own schooldays there, makes Henry Esmond pass part of his early life at Ealing; while Harrison Ainsworth has much of the county in his *Jack Sheppard*. Matthew Arnold's association with *Laleham* inspired William Watson's poem, *In Laleham Churchyard*. Consult *The Antiquities of M., M. Sharpe, 1911; Victoria History of the co., 2 vols., ed. W. Page, 1911.*

**Middlesex Hospital.** London hospital founded in 1745. Situated in Mortimer Street, London, it has over 700 beds, and a special feature is the cancer department, established in 1792. A cancer wing was opened in 1900, and in connexion with it are research laboratories for investigating the nature and causes of malignant disease. A medical school also has facilities for research.

**Middlesex Regiment.** Unit of the British army. Officially known as the Middlesex Regiment (Duke of Cambridge's Own), it was formed in 1881 by an amalgamation of the 59th Foot, raised in 1755, and the 77th Foot, raised in 1787. The 59th long served as marines, and in India gained the honours Mysore and Seringapatam. Eight honours were won under



Middlesex arms



Middlesex. Map of this English county, one of the home counties north of the Thames

Wellington in the Peninsular campaigns. At Albuera the infantry brigade, of which the 59th formed



Middlesex Regt.  
badge

part, was almost overwhelmed by a superior French force, but their wounded colonel refused to be carried to the rear, and shouted, "Die hard, my men, die hard." After the action the rations for one company were drawn by a drummer in his hat. Since that time the Middlesex Regiment has been known as "Die Hards." In the Crimean War the regiment won three honours and gained four V.C.s at Sevastopol; at Inkerman the 59th suffered such heavy casualties that its strength was reduced to that of a company. The regiment was in the Maori, Zulu, and South African wars.

Forty-six battalions raised for the First Great War earned the honours: Mons, 1914; Ypres, 1915, '17, '18; Albert, 1916, '18; Bazentin; Cambrai, 1917, '18; Hindenburg Line; Suvla; Jerusalem; Mesopotamia. The regiment served at Murmansk in 1919. Of Middlesex battalions which served in the Second Great War, the 1st surrendered to the Japanese at Hong Kong; the 2nd fought in France, 1939-40, and N.W. Europe, 1944-45; 1/7th, in France, 1939-40, Africa, N.W. Europe; 2/7th, in Africa and Italy; 1/8th, in France, 1939-40, N.W. Europe; and 2/8th, in N.W. Europe. The cypher and coronet in the centre of the badge are those of the duke of Cambridge, and the prince of Wales's feathers and motto perpetuate the original badge of the 77th Foot. The regimental depot is at Mill Hill.

**Middleton.** Mun. borough and market town of Lancashire, England. It is 6 m. N. of Manchester by rly. and has silk and cotton factories, bleaching, dyeing, and calico-printing works, iron foundries, chemical, soap and jam-making factories, and a rubber industry. Yet despite its industrial development most of the land is wooded or devoted to agriculture. Water is supplied by Heywood and Middleton water board. Middleton forms with Prestwich and Whitefield a coun-



Middleton  
borough arms

ty constituency of Lancashire. Its charter for a weekly market goes back to 1791; market day is Fri. Population (estimated) 30,000.

**Middleton, EARL OF.** Scottish title borne from 1656 to 1695 by the family of Middleton. John Middleton, of Middleton, Kincardineshire, served Charles I in Scotland during the civil war. He was taken prisoner at Preston and at Worcester, but escaped to France and joined the circle around Charles II. In 1653 he was sent to Scotland to lead a rebellion, but this was a failure. Charles created him an earl in 1656, and after the Restoration made him commander-in-chief. He died at Tangier in June, 1674. Middleton's son Charles, 2nd earl (d. 1719), was a secretary of state under James II. He followed the deposed king to France. The title was taken from him in 1695, but was claimed by the Middletons until the death of John, nominally the third earl, about 1746.

**Middleton, CECIL HENRY** (1887-1945). British gardener and broadcaster. Son of the head gar-



C. H. Middleton,  
British gardener

dener on a Northants estate, he entered the seed trade, afterwards becoming a student at Kew. He was on the horticultural staff of the board of Agriculture, 1914-18, and an instructor in horticulture for Surrey county council. In 1931 he began to broadcast talks on gardening, and from 1934 to 1945 his Sunday series, *In Your Garden*, continued without a break, his unpretentious manner bringing him tremendous popularity. In 1937 he was elected an associate of honour of the Royal Horticultural Society, and he was in demand as adviser and judge at shows. He died Sept. 18, 1945.

**Middleton, THOMAS** (c. 1570-1627). English dramatist. Born in London of a good family, he was a member of Gray's Inn, and wrote some satirical tracts. About 1600 he turned his attention to the stage, composing 15 plays independently, and seven in collaboration with Dekker, Rowley, and others. City chronologer from 1620, he was buried in the churchyard of Newington Butts. His work is marked by coarseness, pointed dialogue, subtle satire, and penetrating wit. Of his comedies

of London manners, *A Trick to Catch the Old One* is the most notable. His best independent

tragedy is *Women Beware Women*. With Rowley he wrote the powerful tragedy of *The Changeling*, and the comedies *The Spanish Gipsy* and *A Fair Quarrel*. His satirical play, *A Game at Chesse*, 1624, was immediately popular, but was suppressed at the request of the Spanish ambassador. *Consult Works*, ed. A. H. Bullen, 1885-86.

**Middleton-in-Teesdale.** A market town of Durham, England. It stands on the Tees, here bordering Yorkshire, 25 m. by rly. W.N.W. of Darlington. There is quarrying and mining for barytes, but the district is largely agricultural and a centre for walkers. Market day, Tues. Pop. 2,000.

**Middletown.** Name of several places in the U.S.A. One is a city of Connecticut, the co. seat of Middlesex co. It is on the Connecticut river, 15 m. S. of Hartford, and served by rly. and steamer from New York. Incorporated in 1651, it became a city in 1784. Between 1750 and 1800 it was Connecticut's wealthiest centre. Products include typewriters and rubber fabrics. Pop. 26,495.

Another Middletown, in Orange co., N.Y., is on the Wallkill river, 65 m. N.W. of New York City. Incorporated 1848, it became a city forty years later, and has developed from an agricultural market town into an industrial centre producing printers' supplies, machine tools, women's wear, and fur and leather goods. Pop. 21,908.

A third Middletown is a city in Butler co., Ohio, on the Miami river, 33 m. N. of Cincinnati. Outstanding products are paper, rust-resisting steel for prefabricated houses, and a chewing tobacco which has reached an annual output of 17 million lb. It was incorporated in 1833. Pop. 31,220.

Middletown was the name used to cover the identity of Muncie, Indiana, by R. S. and H. M. Lynd in their social studies of a typical American city of the Middle West (q.v.), Middletown, 1929, Middletown in Transition, 1937 and 1947.

**Middle Wallop.** R.A.F. aerodrome in Hampshire, England. Situated 5 m. S.W. of Andover, it was one of the stations of No. 11



Thomas Middleton,  
English dramatist  
After J. Thurston



group, Fighter Command, in the Second Great War, and was damaged by German bombers in the Battle of Britain. Later it was a night fighter base and prominent in the air defence of London. Over Wallop and Nether Wallop are other villages in the district. Wallop is the family name of the earls of Portsmouth.

**Middle West.** Accepted name for the N. central section of the U.S.A. It consists of the region extending from the Rocky Mts. to the Alleghenies, N. of the Ohio River and the S. boundaries of Missouri and Kansas. It is chiefly industrial and agricultural. Many of its inhabitants, especially in rural areas, are of German and Scandinavian descent. Before the shock of the Japanese attack on Pearl Harbour they took little interest in foreign policy, and are apt to be suspicious of Wall Street and Washington bureaucracy: they often show a marked independence of party machines, but exert considerable influence on public affairs.

**Middlewich.** Market town and urban dist. of Cheshire, England. It is 6 m. S. of Northwich, near the river Dane, and is served by rly. and the Trent and Mersey canal. The chief building is the old church of S. Michael, a place of refuge for Royalists in the Civil War. Salt is extracted from the brine springs here and chemicals and condensed milk are also made. Middlewich is in the centre of the wiches, or salt towns, hence its name. Market day, Tues. Pop. 5,458.

**Middlings.** A technical term used in flour milling and in metallurgy. In flour milling, it is applied to a mixture of broken up bran or husk, with a small proportion of flour mostly adhering to the bran. It is one of the so-called "offals" of the old process of flour milling, and is used for poultry and pig feeding. A newer meaning refers to a product of the process of flour milling, by roller mills. These first break up the grain of the wheat into a product which apart from the bran may be separated into three grades known as semolina, middlings, and dunst.

In metallurgy, the term refers to a product of the grading or concentration of ores. This grading may divide the ore into two parts only, the one rich in metal and the other worthless; but frequently there are three products, a rich one ready for immediate smelting or other treatment; an intermediate one which will be submitted to a further preliminary treatment; and a third which is worthless, and

is rejected. These are known respectively as heads, middlings, and tailings. See Metallurgy.

**Midge.** Name vaguely applied to many two-winged flies or Diptera (q.v.). They have narrow,



Midhurst, Sussex. Ruins of Cowdray Castle, a Tudor mansion formerly the seat of the earl of Egmont

elongated bodies, slender legs, and usually thread-like antennae often densely plumose in the males. The name refers more particularly to members of the family Chironomidae that are often seen dancing in swarms on summer evenings, especially near water. Midges usually resemble gnats or mosquitoes (q.v.) in general appearance but lack the piercing mouth-parts of those insects. An exception is the group of minute midges belonging to the allied family Ceratopogonidae, which have lancet-like mouth-parts and suck blood. With this habit species of *Culicoides* often cause much annoyance on summer evenings, especially in Scotland. Other flies known as midges are the Cecidomyiidae, or gall-midges, which include the Hessian fly.

**Midhat Pasha** (1822-84). Turkish politician. Born in Constantinople (Istanbul) he entered the Turkish civil service and was governor of Bulgaria, 1862-67. Becoming grand vizier in 1876, he was a prime mover in the deposition of Abdul Aziz. He drew up the draft constitution of the Ottoman Empire, but was banished in 1877. Allowed to return next year, he was nominated governor of Syria. Sentence of death passed upon him in 1881, on a charge of murdering Abdul Aziz, was commuted to banishment through the representation of the British government. He died in Arabia, May 8, 1884.

**Midhurst.** Market town of Sussex, England. It stands on the Rother, 12 m. by rly. N. of Chichester. The church, dedicated

to S. Mary Magdalene and S. Denis, is Perpendicular. There was a castle here, the seat of the Bohuns, in the Middle Ages. There is a 17th cent. grammar school and the Spread Eagle hotel dates in part

from the 15th cent. About 4 m. N. is the King Edward VII sanatorium for consumptives, opened in 1905. Near the town, which is surrounded by some of the most lovely scenery in Sussex, are the ruins of Cowdray Castle, now the property of Viscount Cowdray. Midhurst was a borough in the Middle Ages, but lost its rights and was long governed by a bailiff elected in the manorial court. It was separately represented in parliament from 1300 to 1885, and had its markets and fairs. Market day, Thurs. Pop. 3,000.

**Midi.** District of France. Without any defined area, it is generally regarded as the region between the Bay of Biscay and the Mediterranean. Toulouse is its capital. It was originally the Middle Land between France and Spain.

**Midi, AIGUILLE DU.** Mt. in France. A peak of the Mont Blanc chain, S.E. of Chamonix, its alt. is 12,600 ft. See Mont Blanc.

**Midi, CANAL DU.** Canal of S. France. It runs from Toulouse to La Nouvelle, near Narbonne, on the Étang de Thau. Known also as the canal du Languedoc, it connects with the canalised Garonne, and thus unites the Mediterranean with the Atlantic. Built during 1666-81 by Paul Riquet, it is still an important waterway for the trade of the S.W. depts. In its 148 m. there are 100 locks, and the chief towns served are Toulouse, Villefranche, Castelnau-d'Aud, Carcassonne, and Narbonne.

**Midi, PIC DU.** Mt. of the Pyrenees, in S. France, entitled in full Pic du Midi d'Ossau. It is nearly due S. of Pau and almost on the Spanish frontier. The Grand Pic has an alt. of 9,465 ft. and the Petit Pic of 9,135 ft. Just below the summit is an observatory where in 1931 the solar corona was first photographed in full sunlight.



Midhat Pasha, Turkish statesman

**Midian.** An ancient region of Arabia. The territory of the Midianites, a tribe descended, according to Genesis, from Midian, a son of Abraham by the Arabian, Keturah, it extended along the E. coast of the Gulf of Akabah. The Midianites, who were partly nomadic and traded by caravan with Egypt and Syria, also inhabited Sinai and the S. borders of Palestine. To merchants from Midian Joseph was sold by his brethren. Moses married a daughter of Jethro, probably a priest of Baal-Peor, the national god. The Midianites were frequently in league with the Moabites against the Hebrews, but were overthrown by Gideon (Judges 7).

**Midland.** Town in Simcoe co., Ontario, Canada, on Georgian Bay, 89 m. N. by W. of Toronto, on the C.P.R. and C.N.R. It has four large grain elevators, and its industries concern timber, silk and woollen mills, foundries and machine shops, and shipbuilding yards. Pop. 6,800.

**Midland Bank.** English banking company. Founded in 1836 as the Birmingham and Midland Bank, it was amalgamated with the Central Bank of London in 1891. In 1898 its title was changed to London City and Midland Bank. The City Bank was then taken over, and there followed a series of amalgamations with organizations in provincial cities. In 1908 the North and South Wales Bank, in 1914 the Metropolitan Bank, were taken over. In 1917 the share capital of the Belfast Banking Co.

was bought, in 1920 that of the Clydesdale Bank, in 1924 that of the North of Scotland Bank. Technically, however, the affiliated banks remained separate concerns.

When in 1918 the London City and Midland and the London Joint Stock Banks combined to form the London Joint City and Midland, the former had a paid-up capital of £5,189,000. Its headquarters were at 5, Threadneedle Street, E.C.2. The name was changed to Midland Bank Ltd. in 1923. By 1948 there were over 2,000 branches in England and Wales, with 16,000 agents in all parts of the world. The head office is in Poultry, London, E.C.2.

**Midland Canal** (*Mittellandkanal*). German system of inland waterways for ships up to 1,000 tons, linking the rivers Rhine and Elbe. Conceived in the mid-19th century, its building began in 1905 and most of it was completed before the Second Great War. It includes the Rhine-Herne, Dortmund-Ems, and other canals; it reaches the Elbe near Magdeburg. Dams, sluices, and power stations were included in the huge project, which was to link Berlin and Hamburg, and thereby the Baltic and North Sea, with the Ruhr. The system was severely damaged in the Second Great War, but was soon reconstructed.

**Midlands.** Term used for the counties in the middle of England. The limits of the Midlands cannot be exactly defined, but they lie approximately between Yorkshire and the Thames, and between

East Anglia and the Welsh border counties. The Midland judicial circuit includes Lincs, Derbyshire, Leicestershire, Rutland, Northants, Warwickshire, and Worcestershire. The terms E., N., and S. Midlands are also used.

**Middleton** or **MIDDLETON.** A market town and urban dist. of co. Cork, Eire. It stands on the Owencurra, which enters Cork harbour just below the town, 13 m. E. of Cork, with a station on the Eire state rlys. There is a grammar school founded in 1709, and a Cistercian abbey once stood here. The site of the place is the property of the earl of Middleton. Market day, Sat. Pop. 2,711.

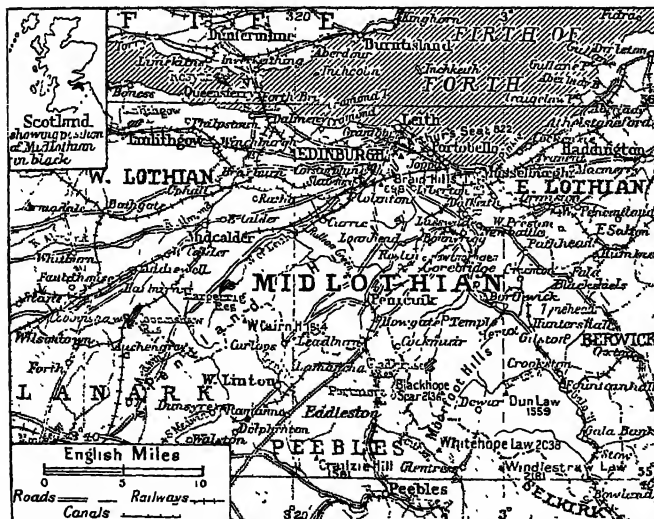
**Middleton, St. John Brodric, 1st Earl of** (1856-1942). British politician.



1st Earl of Middleton, servative M.P. British politician for West Surrey in 1880.

Made financial secretary to the War office in 1886, he was under-secretary for foreign affairs in 1898: and secretary for war in 1900. In 1903 he was transferred to the secretaryship for India, going out of office in 1905. In 1907 he succeeded to the peerage. He was a leading figure among the Unionists in discussions on the settlement of Ireland, and was elected a senator of the I.F.S. in 1921. Created K.P. in 1915 and earl in 1920, he died Feb. 13, 1942. He was succeeded by his eldest son, George (b. Feb. 21, 1888).

**Midlothian** or **EDINBURGHSHIRE.** County of Scotland. It has a coastline of 12 m. on the Firth of Forth, its other boundaries being, from N.W. to N.E., the cos. of W. Lothian, Lanark, Peebles, Selkirk, Roxburgh, Berwick, and E. Lothian. Its area is 366 sq. m. including the island of Crumond. The area is hilly, save on the coast; herein are the Pentland and Moorfoot Hills, with several peaks over 1,500 ft. high, as well as Arthur's Seat and other heights around Edinburgh (q.v.). The chief rivers are the Esk, Water of Leith, Almond, and Gala. Edinburgh is the capital. In the co. are Leith, now part of Edinburgh, Dalkeith, Musselburgh, Midcalder, and Penicuik, as well as such picturesque spots



Midlothian (Edinburghshire). Map of the Scottish county south of the Firth of Forth, rich in historic and antiquarian associations

as Roslin, Hawthornden, and Newbattle. Oats, barley, turnips, etc., are grown; horses, cattle, sheep, and pigs are reared. The county also produces coal, building stone, limestone, and oil from shales. Market gardening is carried on near Edinburgh.



Midlothian arms

Outside the city the chief manufacture is paper. The county is served by rlys. and the Union Canal. It joins with Peeblesshire, to send two members to Parliament.

As the district around Edinburgh, Midlothian is rich in antiquarian and historic remains. Before the Norman Conquest the county was part of Northumbria. There are ruined castles at Borthwick, Crichton, and Craigmillar; Rullion Green, Carberry Hill, and Pinkie are battlefields. Pop. est. 563,000.

**Midnapur.** Dist. and town of India, in the Burdwan division, W. Bengal. The dist. lies in the S.W. of W. Bengal, of which it is the granary. The E. portion is alluvial plain and densely populated; the W. is jungle and sparsely peopled. The chief crop is rice. The town is an important rly. junction on the Kasai river, 60 m. W. of Calcutta, to which it is joined by a navigable canal. District area, 5,274 sq. m. Pop. dist. 3,190,647; town 43,171.

**Midnight Sun.** Appearance of the sun above the horizon at midnight. It may be witnessed at any point on the Arctic circle on the N. summer solstice, June 21, and on the Antarctic circle on the S. summer solstice, Dec. 21. Within these circles the length of time the sun is in the sky without setting gradually increases, being 72 days in lat. 70°, and 138 days in lat. 80°, whilst the sun does not set for six months at the poles. Tourists visit the N. of Norway to see the phenomenon.

The Antarctic has long spells of sunshine in summer. During Scott's 2nd expedition the burn on the sun card at Cape Evans (77½° S. 166½° E.) was frequently unbroken for 24 hrs.; between Dec. 9 and 12, 1911, there was a continuous record of 66½ hrs. of sunshine.

The phenomenon of the midnight sun is due to the inclination of the earth's axis, at 66½° to the plane of its orbit round the sun. Since the direction of the axis in space is the same at all times, at

one point (the summer solstice) the entire arctic circle is illuminated, the Antarctic being in total darkness. Six months later the position is reversed.

**Midrash.** An ancient Hebrew commentary on the O.T., consisting of a vast number of comments by various authors, mixed with tales and folklore. The term is also applied to the edifying tales in the O.T. illustrating religious truths, such as the books of Ruth and Jonah. It was the storehouse from which the Rabbis drew most of their teaching. See Mishna.

**Midshipman.** In the British navy, a junior officer between the ranks of naval cadet and sub-lieutenant.



The name is derived from the fact that the quarters of the "young gentlemen" qualifying for commissions were situated amidships on the lower deck. A midshipman begins his training as a cadet at a shore training college. If a Dartmouth entry, he commences at the college when 13½; this system is due to end in 1950. Under a scheme started in 1948, cadets may begin training at 16, or, if special or direct entry, 17-18. After passing the courses in the prescribed training college the student becomes a midshipman and goes to sea.

In addition to pursuing his studies under a naval instructor,

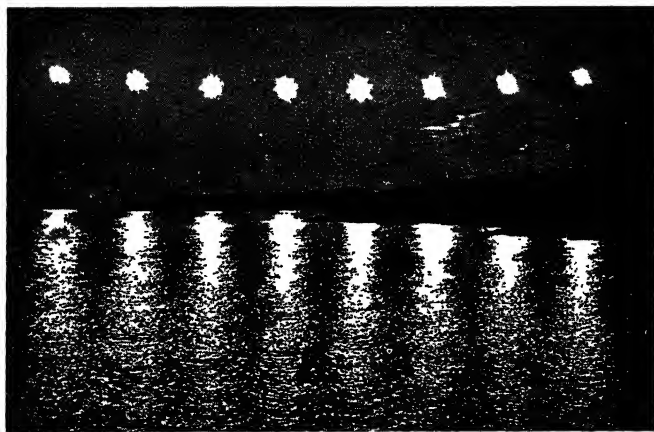
the midshipman, or "snotty," takes part in the daily routine of the ship, passing the word of command to the crew, seeing that orders are carried out, taking charge of boats, etc. Midshipmen mess in the gun-room. Their distinguishing badge is a white tab on the collar of their jacket, and for side arms they carry a dirk.

**Midshipman Easy.** Central character of the novel by Capt. F. Marryat, described under its full title Mr. Midshipman Easy.

**Midsomer Norton.** Part of the urban dist. of Norton-Radstock, Somerset, England. It is 12 m. S.S.W. of Bath, on the rly. and the little river Somer. The chief building is the Perpendicular church of S. John the Baptist, rebuilt in the 19th century. The small Somerset coalfield is near by.

**Midsommer Day.** June 24, popularly the middle day of summer. Astronomically the period of the summer solstice (about June 21) is the beginning of summer. Midsommer Day is the feast of the Nativity of S. John the Baptist and is an English quarter day. In some English towns and villages, stools decorated with flowers stuck in clay were placed by the house-doors or at cross-roads on this day, a custom possibly derived from the Roman festival in honour of the deities of the crossroads. The term "midsummer madness" may refer to the wild festivities of Midsummer Eve, or to the supposed effect of the midsummer moon. "Midsummer Man" is the plant orpine (*Sedum telephium*) used by girls on Midsummer Eve as a test of their lovers' fidelity.

**Midsummer Night's Dream,** A. Fairy comedy by Shakespeare, containing some of his most de-



Midnight Sun. Photograph with eight exposures at intervals of 45 minutes, showing that the sun during this period is not setting. See text

lightful flights of fancy. The scene is laid partly in Athens, but mostly in a so-called "wood near Athens," which is in many ways as English a wood as could be conceived, just as the artisans who assemble there to rehearse a play for the nuptials of Theseus, duke of Athens, are robustly English, even in their names — Nick Bottom, Peter Quince, Francis Flute, Tom Snout, etc. The wood is peopled by the fairies of English tradition, including Oberon, their king, and Titania, their queen, also the mischievous Puck or Robin Goodfellow. The artisans, as well as two young couples crossed in love who have fled for various reasons to the wood, become involved in the quarrel of Oberon and Titania and the pranks of Puck, and the comedy is rich; Bottom for example, is given an ass's head and Titania, under a spell, falls in love with him. Even after the dénouement and the rectification of all errors further comedy is provided by the artisans' performance of the story of Pyramus and Thisbe. But the fairies hold the stage to the last.

Written 1594, and first published in quarto form 1600, the play has 878 lines in blank verse and 731 pentametric rhymes. There have been many notable modern presentations in London, including those of Tree (His Majesty's, 1900 and 1911), Granville-Barker (Savoy Theatre, 1914), Gielgud (Haymarket, 1945), and several at the Open Air Theatre at Regent's Park.

The play has always attracted leading actors. Bottom, for example, has been memorably played by Samuel Phelps, Tree, Oscar Asche, Arthur Bourchier, Nigel Playfair, Ralph Richardson, Robert Atkins, Donald Wolfit, Francis L. Sullivan, Leslie Banks; Titania by Lady Tree, Gwen Ffrangcon-Davies, Jean Forbes-Robertson, Fay Compton, Peggy Ashcroft; Oberon by Mme. Vestris, Julia Neilson, Denis Neilson-Terry, Phyllis Neilson-Terry, Gladys Cooper, Jean Forbes-Robertson, Nicholas Hannen, John Gielgud, Robert Helpmann. The play has long been popular with amateurs, especially for open-air performance, also in schools, the play serving as an admirable introduction to Shakespeare. A film version directed in America by Reinhardt, 1934, was chiefly notable for the casting of James Cagney, famous in gangster parts, as Bottom. Mendelssohn's in-

cidental music, which includes the familiar Wedding March, was first performed in Berlin, 1843.

**Midway Islands.** Group of islands belonging to the U.S.A. in N. Pacific. About 1,150 m. N.W. of Honolulu, the two larger islands, Sand and East, have a combined area of just under 1,200 acres and are unproductive, being little more than sand dunes. Discovered in 1859, they were formally declared a U.S. possession in 1867, being placed under the control of the navy department in 1936. They provided facilities for trans-Pacific air services and contained a seaplane base. Pop. (1938) 118.

Attacked by Japanese naval and air units on Dec. 8, 1941, the garrison, U.S. marines, offered successful resistance to this and later raids. On June 4-6, 1942, a U.S. fleet defeated a Japanese force, equipped for the invasion of the Hawaiian Is., in the vicinity of Midway. This decisive victory, following closely on the battle of the Coral Sea (*q.v.*), marked the end of the Japanese advance in the Pacific.

**Midwife.** Woman who assists women during childbirth. She comes under the Midwives Acts 1902, 1926, and 1936. With a few exceptions, any man or woman not a certified midwife or registered nurse who for purposes of remuneration attends as a nurse on a woman in childbirth, or as a maternity nurse within ten days after, is liable to a fine.

The central midwives board is a body set up in 1902 to control the training, examination, and registration of midwives in England and Wales. The offices are 73, Great Peter St., London, S.W. 1. No woman can now be certified unless she has followed a prescribed course of study and passed certain examinations, and the board can remove the name of a midwife from the roll for misconduct. See Birth; Obstetrics; Pregnancy.

**Mieres.** Town of Spain, in the prov. of Oviedo. It stands on the river Nalon, 12 m. by rly. S. of Oviedo. The centre of the Asturian mining industry, it has iron-foundries, steel and zinc works, blast furnaces, and chemical works. An extensive trade is carried on in timber, cider, fruit, and cattle. Sulphur, copper, and cinnabar are mined. Pop. 52,373.

**Mierevelt, MICHEL JANSZ VAN** (1567-1651). Dutch painter. Born at Delft, May 1, 1567, he studied there under Willemsz and Augustyns, and at Utrecht under An-

tonio Blokland, 1579-83, and became court painter to the prince of Orange. He was famed for his numerous portraits, executed with a skill and attention to detail which compensate for a certain coldness in treatment. Among his portraits are those of Grotius, Gustavus Adolphus of Sweden, Huygens, Coligny, the duke of Buckingham, and William the Silent, and he left also some still life and genre paintings. Examples are to be seen in the Ryks museum, Amsterdam, the Louvre, The Hague, Dresden, Berlin, and one in the National Gallery, London. He died at Delft, July 27, 1651.



M. van Miervelt,  
Dutch painter  
After Van Dyck

**Mieris, FRANS VAN, THE ELDER** (1635-1681). Dutch painter. Born at Leyden, April 16, 1635, he was a pupil of Gerard Douw, and became a member of the Leyden Guild, 1658. He painted scenes of better class Dutch life. He died at Leyden, March 12, 1681. His sons Jan and Willem



Frans van Mieris,  
Dutch painter

were painters of repute as well as also his grandson Frans.

**Miers, SIR HENRY ALEXANDER** (1858-1942). British scientist. He was born at Rio de Janeiro, May 25, 1858, and educated at Eton and Trinity College, Oxford, and was assistant at the British Museum, 1882-95. Instructor in crystallography at the central technical college, S. Kensington, 1886-95, he was Waynflete professor of mineralogy, Oxford, 1895-1908, and principal of London university, 1908-15. From 1915 to 1926 he was professor of crystallography and vice-chancellor of Manchester university. He was elected a trustee of the British museum in 1926 and held various official positions in connexion with the control of museums. On the formation of the



Sir Henry A. Miers,  
British scientist  
Russell

Gemmological Association of Great Britain in 1932 he was elected its first president. His publications included *The Soil in Relation to Health* (with R. Crosskey), 1893, and *Mineralogy*, 1902. A knight from 1912, he died Dec. 10, 1942.

**Migmatite** (Gr. *migma*, mixture). In geology a type of rock occurring in regions of intense metamorphism where the normal country rock is intimately mixed with granitic material which may have been injected or may have soaked into the host rock. Migmatites, first described from Finland, also occur in Sutherland.

**Mignet**, FRANÇOIS AUGUSTE MARIE (1796-1884). French historian. Born at Aix-en-Provence,



François Mignet,  
French historian

May 8, 1796, he studied at Avignon and Aix, and became a lawyer. He made a name, however, by his historical work. His *History of the French Revolution*, 1824, is still standard, while his studies on the history of the 16th and 17th centuries—

Antonio Perez and Philip II, 1845; Charles V and his Abdication, 1854; and Mary Stuart, 1851—are marked by the same accuracy and clearness. He also wrote upon the history and institutions of France in the Middle Ages. He died March 24, 1884, in Paris.

**Mignonette** (*Reseda odorata*). Perennial herb of the family Resedaceae. Its native country is unknown; but, introduced to British gardens from Egypt in 1752, it has become one of the most popular of plants owing to its fragrant flowers. The stem branches from its base, and the plant becomes a rather diffuse clump, bearing alternate lance-shaped leaves which may be simple or three-lobed. The flowers are borne in dense pyramidal racemes at the ends of the shoots. The calyx is in six parts, and the cream-coloured petals are divided into slender segments. The most conspicuous feature is supplied by the numerous red stamens. Usually grown as an annual, it succeeds in almost any garden soil; best results are obtained on rich, heavy soil, to which old mortar has been added. Seed should be sown very thinly. *R. lutea*, the wild mignonette, is found in Britain in Limestone districts.



Mignonette.  
Foliage and flower

**Migraine.** Severe headache, often one-sided, associated with nausea or vomiting. It is usually accompanied or ushered in by disturbance of any of the five senses, such as flashes of light before the eyes or sound sensations. Initially

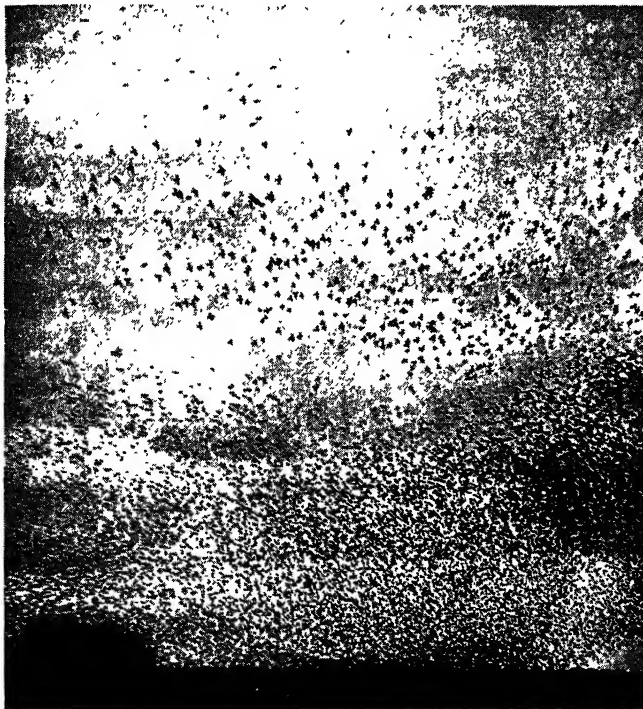
migraine probably arises from allergy. In patients who are badly adjusted to the strains and stresses of life it tends to become an escape mechanism. Migraine also always argues the presence of infected sinuses, and the primary cause is often a blocked nasal passage. The liver of the sufferer from migraine nearly always functions badly, failing in one of its main tasks, that of detoxication, and so allowing poisonous material to find its way into the blood stream. Treatment consists in the disinfecting of the sinuses and in easing the work of the liver by removing from the diet milk, fats, pork, chocolate, and rich cheese.

**Migration** (Lat. *migrare*, to move). Term for the movement, usually the mass movement, of living creatures from one place of residence to another.

**HUMAN MIGRATION.** This is discussed under Emigration; Immigration (*qq.v.*).

**ANIMAL MIGRATION.** Many animals spend parts of their lives in one place and parts in another. It is very common to find that the change-over from one habitat to the other takes place at a time when the seasons are changing in an important respect. This seasonal change of habitat, involving almost or quite all the individuals of a recognizable population nearly simultaneously, is migration in its strict sense, though the word does duty for other things, *e.g.* the slow or sudden irreversible movement of populations into exploitable, but not hitherto exploited, areas, and the helpless drifting of weak things in currents set up in the water or the air.

Birds make more of a show of their migrations than most other animals, and for that reason bird migration occurs first to most people when they think of animal migration. Birds, however, have by no means a monopoly of



Migration. A dense flock of starlings migrating from Hickling Broad, Norfolk. Seasonal mass migration is common to several other species of birds



seasonal migration. Fish, worms, newts, monkeys, whales, butterflies (and nomadic man) all migrate to some degree in this sense.

The two great problems of migration are: what it is that starts so many individuals off on their journeys at almost the same time; how they find their way. To neither of these questions can the biologist give anything like a satisfactory answer, but it can be said that migration, and the timing of migration, are related sensibly to two of the great activities, two of the great needs, of animals: reproduction and the search for food. In mammals and in birds the mechanism which controls the timing of reproduction is partially understood. It depends upon a most complicated interaction of a number of endocrine glands of which one of the most important, playing probably the master controlling part, is the pituitary gland (*g.v.*) lying at the base of the brain. There is no doubt that this gland—in particular its anterior part—produces substances (hormones) which initiate and maintain the activities of the gonads that lead to reproduction.

#### Stimulus of Light

Considerable evidence shows that in certain forms, *e.g.* the ferret, light stimulates the pituitary and starts the reproductive process. Most animals which migrate to breed move towards the poles in the summer of the hemisphere in which they live. This means that they move to a region of longer day—for instance, a goose feeding in winter in Somerset may move to Finland to breed, where it will find nearly twenty-four hours of daylight. As well as the direct stimulus of light falling on the eyes it seems that the added hours of bodily activity increase the activity of the pituitary, at least in birds. (This principle has its practical application in commercial egg-production, where artificial illumination of hen-houses increases production of eggs.)

As regards food supply, animals eat either plants or other animals which have eaten plants. Therefore the food supply of animals depends upon the condition of the plants of any area. In the autumn of each hemisphere the long polar night begins to set in towards the poles and spreads, in the northern hemisphere southwards and in the southern hemisphere northwards. As it spreads vegetation dies, and in the extreme case of the far north and the far south is obliterated temporarily by snow and ice.

Animals, therefore, which, for the reasons given above, breed well in the long days near the pole, eating the short-lived vegetation of the summer, or eating other animals feeding upon this in their turn, have to move away from the poles for their winter food.

The why of seasonal migration is thus reasonably explained, but not the how. The only hint is that light does seem to play a considerably more important part in initiating, and perhaps even in directing, migration than does temperature. Of the mechanism by which animals find their way to regions suitable for breeding or for feeding, biologists are in almost complete ignorance. Very little indeed is known about how any animal finds its way about, over long or short distances. The problem presented by the dog or the cat or the pigeon which finds its way home from distant places has scarcely yielded at all to the most elaborate investigation. So far as migration is concerned, it has been suggested that there may be some mechanism in the inner ear which acquaints the animal with the direction of the rotation of the earth, but there is little or no evidence to support this. It does appear that some people are more aware of the points of the compass than others, and there are people who seem to feel some uneasiness if they believe themselves to have lost their orientation, but these are vague indications of little or no scientific value. Vision appears to play a considerable part in an animal's finding its way, and fog is a disturbing factor in migration. Homing pigeons usually refuse to fly in fog; but it has been found that pigeons released from aircraft which subsequently sank at sea found their way home in fog; when confronted with the absolute necessity of flying or drowning, they flew home.

The size and complexity of the problem of migration can be indicated from considering a few examples. In insects there are large movements involving great numbers of individuals among the locusts (*g.v.*) and, less well-known but equally remarkable, among the beetles, the dragonflies, and the butterflies. The American monarch butterfly, for instance, is found in summer in Alaska, in winter in Mexico, where it hibernates more or less completely, and in the same location year after year. The difficulty of understanding this is increased by the fact that, so short is the life-cycle

of this animal, one or two generations have passed in the interval between the departure of the species in the spring from Mexico and its return in the following autumn. How the butterflies find their way back to the same trees that their grandparents used is quite unknown. A similar problem is posed by the behaviour of the eels (*g.v.*) which breed at sea, in the south Atlantic, and appear to return to the streams and ponds of Europe and of America respectively inhabited by their forefathers. The salmon, too, return to the river in which they passed their youth after a considerable period as young and adult fish at sea. In these rivers they spawn, and the cycle is repeated.

#### Spasmodic Migrations

The enormous and spectacular movements of such mammals as the marten and the grey squirrel in the New World, or of the lemming in Scandinavia, are probably to be regarded rather as one-way pressure movements in response to hunger than as migration. They are essentially spasmodic, and not rhythmical. Hunger in this context includes the desire for water, and for salt, both of which may run short if a population grows suddenly.

Animals are not static. They are not only selected by their environment. They can, and do, also select surroundings that suit them. When their demands change seasonally or rhythmically, the exercise of this choice requires seasonal or rhythmical movement. When circumstances, or the density of their populations, change spasmodically, spasmodic movements follow. But knowledge of how these movements are directed is for the future. *Consult* Migration of Fishes, A. Meek, 1916; Bird Watching, J. Fisher, 1941.

Paul G. 'Espinasse

**Miguel, MARIA EVARIST (1802-66).** Portuguese prince. He was born at Lisbon Oct. 26, 1802, the



Dom Miguel,  
Portuguese prince

third son of John VI of Portugal. On the death of John VI in 1826, Miguel's brother, Dom Pedro, already emperor of Brazil, abdicated his rights in favour of his younger

daughter, Donna Maria, on condition that she married Miguel, but this she refused to do. Dom



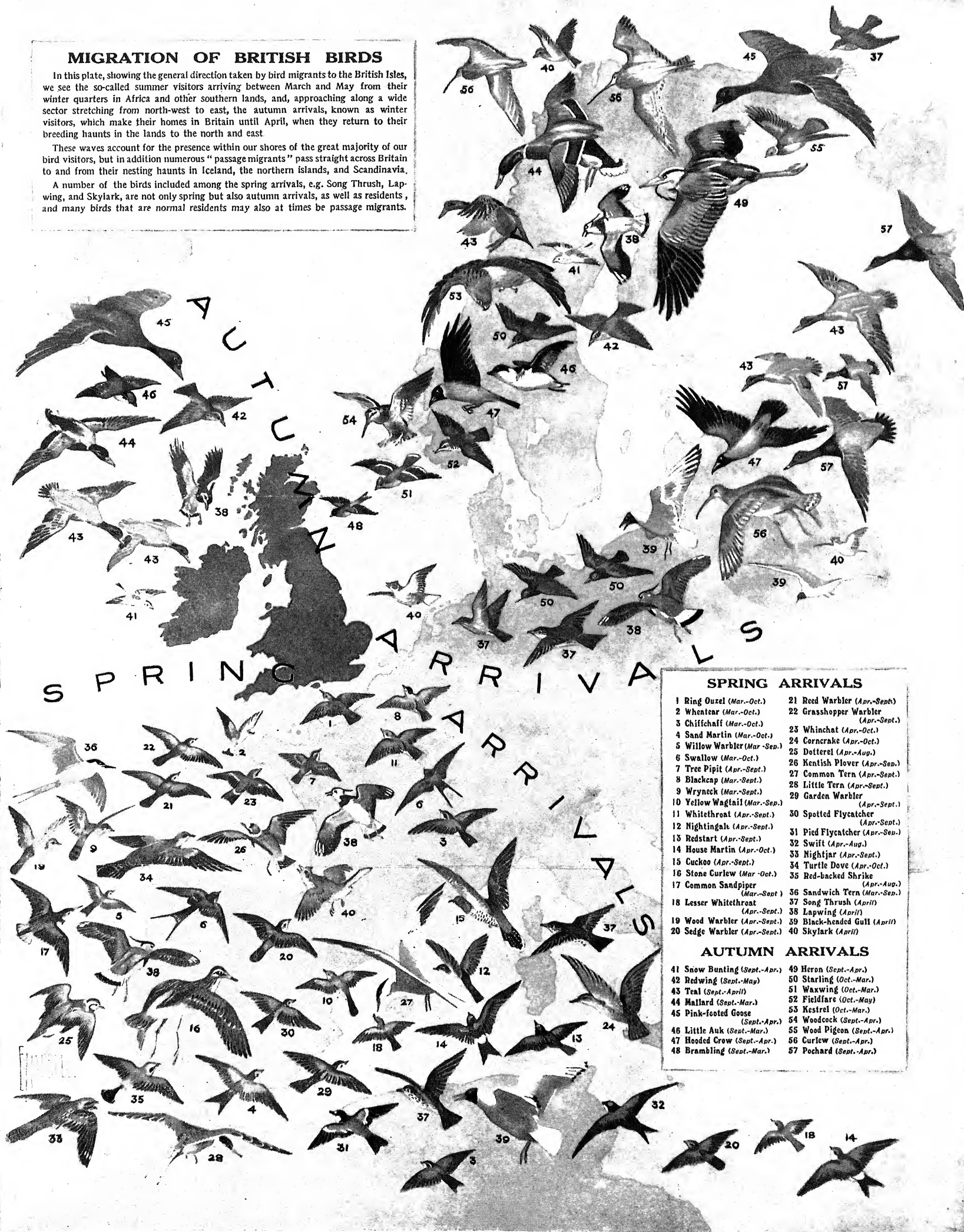


## MIGRATION OF BRITISH BIRDS

In this plate, showing the general direction taken by bird migrants to the British Isles, we see the so-called summer visitors arriving between March and May from their winter quarters in Africa and other southern lands, and, approaching along a wide sector stretching from north-west to east, the autumn arrivals, known as winter visitors, which make their homes in Britain until April, when they return to their breeding haunts in the lands to the north and east.

These waves account for the presence within our shores of the great majority of our bird visitors, but in addition numerous "passage migrants" pass straight across Britain to and from their nesting haunts in Iceland, the northern islands, and Scandinavia.

A number of the birds included among the spring arrivals, e.g. Song Thrush, Lapwing, and Skylark, are not only spring but also autumn arrivals, as well as residents, and many birds that are normal residents may also at times be passage migrants.



### SPRING ARRIVALS

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| 1 Ring Ouzel (Mar.-Oct.)           | 21 Reed Warbler (Apr.-Sept.)        |
| 2 Whentear (Mar.-Oct.)             | 22 Grasshopper Warbler (Apr.-Sept.) |
| 3 Chiffchaff (Mar.-Oct.)           | 23 Whinchat (Apr.-Oct.)             |
| 4 Sand Martin (Mar.-Oct.)          | 24 Corncrake (Apr.-Oct.)            |
| 5 Willow Warbler (Mar.-Sept.)      | 25 Dottedterel (Apr.-Aug.)          |
| 6 Swallow (Mar.-Oct.)              | 26 Kentish Plover (Apr.-Sept.)      |
| 7 Tree Pipit (Apr.-Sept.)          | 27 Common Tern (Apr.-Sept.)         |
| 8 Blackcap (Mar.-Sept.)            | 28 Little Tern (Apr.-Sept.)         |
| 9 Wryneck (Mar.-Sept.)             | 29 Garden Warbler (Apr.-Sept.)      |
| 10 Yellow Wagtail (Mar.-Sept.)     | 30 Spotted Flycatcher (Apr.-Sept.)  |
| 11 Whitethroat (Apr.-Sept.)        | 31 Pied Flycatcher (Apr.-Sept.)     |
| 12 Nightingale (Apr.-Sept.)        | 32 Swift (Apr.-Aug.)                |
| 13 Redstart (Apr.-Sept.)           | 33 Nightjar (Apr.-Sept.)            |
| 14 House Martin (Apr.-Oct.)        | 34 Turtle Dove (Apr.-Oct.)          |
| 15 Cuckoo (Apr.-Sept.)             | 35 Red-backed Shrike (Apr.-Aug.)    |
| 16 Stone Curlew (Mar.-Oct.)        | 36 Sandwich Tern (Mar.-Sept.)       |
| 17 Common Sandpiper (Mar.-Sept.)   | 37 Song Thrush (April)              |
| 18 Lesser Whitethroat (Apr.-Sept.) | 38 Lapwing (April)                  |
| 19 Wood Warbler (Apr.-Sept.)       | 39 Black-headed Gull (April)        |
| 20 Sedge Warbler (Apr.-Sept.)      | 40 Skylark (April)                  |

### AUTUMN ARRIVALS

- |                                   |                             |
|-----------------------------------|-----------------------------|
| 41 Snow Bunting (Sept.-Apr.)      | 49 Heron (Sept.-Apr.)       |
| 42 Redwing (Sept.-May)            | 50 Starling (Oct.-Mar.)     |
| 43 Teal (Sept.-April)             | 51 Waxwing (Oct.-Mar.)      |
| 44 Mallard (Sept.-Mar.)           | 52 Fieldfare (Oct.-May)     |
| 45 Pink-footed Goose (Sept.-Apr.) | 53 Kestrel (Oct.-Mar.)      |
| 46 Little Auk (Sept.-Mar.)        | 54 Woodcock (Sept.-Apr.)    |
| 47 Hooded Crow (Sept.-Apr.)       | 55 Wood Pigeon (Sept.-Apr.) |
| 48 Brambling (Sept.-Mar.)         | 56 Curlew (Sept.-Apr.)      |
|                                   | 57 Pochard (Sept.-Apr.)     |





Miguel was proclaimed king June 30, 1828, but was compelled to leave Portugal by the convention of Evora Monte, May 26, 1834. He found refuge in Rome. He married in 1851 Princess Adelaide of Löwenstein-Wertheim-Rosenberg, and he died Nov. 14, 1866.

**Mihailoff, IVAN.** A Bulgarian revolutionary. As leader of the Macedonian revolutionary organization I.M.R.O., he was forced to flee the country in 1934, and in 1935 was sentenced to death in absentia for his part in the murder of seven councillors in Krupnik in 1933. He returned to Bulgaria under an amnesty, May 23, 1941.

**Mihailovitch** OR **MIKHAİLOVITCH, DRAZA** (1893-1946). Yugoslav soldier. Born in the village



Draza Mihailovitch, Yugoslav soldier, as he was in 1941 (left) and at his trial at Belgrade, June, 1946 (right)

of Shumadiza, he fought in the Balkan War of 1912-13 and in the First Great War, serving in Salonica and being decorated for bravery. When the Germans overran Yugoslavia in 1941, Gen. Mihailovitch took to the mountains, and there raised the Chetniks (*q.v.*), guerrilla bands which caused so much trouble to the Germans that they offered a reward for his capture. The Allies supplied him with money and equipment, and in Jan., 1942, he was appointed minister of war in the exiled Yugoslav government. His intense Serbian nationalism, however, alienated a great number of his supporters, and caused frequent clashes with the partisans under Tito, who accused him of having signed an agreement with the Germans and of using his Chetniks for his own political ends. In May, 1944, Allied support was withdrawn from him. After the defeat of Germany, Mihailovitch took refuge in the mountains, but was captured, Mar. 13, 1946, brought to trial in June, condemned to death as a collaborator July 15, and shot, July 17, 1946.

**Mikado** (Jap., exalted gateway). Title used by Europeans, but seldom by the Japanese, for the emperor of Japan. His own subjects called him *tenshi* (son of

heaven) or *tennō* (heavenly king). Japanese history claimed divinity for the mikados through their descent in the direct line from Jimmu, a descendant of the sun goddess, who ascended the throne in 660 B.C.; but the reigns of the monarchs before A.D. 712 were largely mythical. Seven of the mikados were women. On Dec. 31, 1945, the emperor Hirohito (*q.v.*), 124th of his line, issued an imperial rescript expressly repudiating his divinity; and on Mar. 6, 1946, a new constitution was drafted in which the position of the emperor as a constitutional monarch was defined, the phrase "sacred and inviolable" being eliminated. See Japan.

**Mikado, THE, OR THE TOWN OF TITIPU.** Comic opera by Gilbert, with music by Sullivan. It was produced at the Savoy Theatre, London, March 14, 1885, where it ran for 672 performances, and is still in the repertoire of the D'Oyly Carte company and a favourite among amateur operatic societies. The setting is mock-Japanese, the characters including the Mikado himself, Ko-Ko, the Lord High Executioner, and Pooh-Bah, Lord High Everything Else. Famous songs include Three Little Maids from School, A Wandering Minstrel, Tit-willow, The Flowers that Bloom in the Spring, and the Mikado's Song which includes the phrase, "to let the punishment fit the crime." For a time the play was withdrawn as a courtesy to visiting Japanese royalty. A screen version, 1939, marked the first filming of a Gilbert and Sullivan opera.

**Mikania.** Large genus of twining perennials of the family Compositae, natives chiefly of tropical America. They have opposite heart-shaped or oval leaves, and flower-heads consisting invariably of four florets only. One species, known as climbing hemp-weed (*M.*

*scandens*), occurs in the U.S.A. and Canada. The S. American *M. guaco*, with blue flowers, is believed to be the species to which chiefly the name of guaco is applied by the natives, who consider it an antidote for poisoning by snake-bite. The name commemorates Joseph G. Mikán (1743-1814), professor of botany at Prague.

**Mikir.** A primitive tribe of Tibeto-Burman stock. They are mostly in the Sibsagar, Nowgong and Khasi and Jaintia hills districts, Assam. Numbering some 100,000, all are animist, except a few hundred Hinduised and some Christian converts. Unwarlike peasantry, occupying pile-houses, they exhibit both Naga and Kuki Chin relationships.

**Mikolajczyk, STANISLAW** (b. 1901). Polish statesman. Son of an emigrant farm labourer, he was born at Gelsenkirchen, Germany, but returned as a child with his family to Poland. He was wounded in the Russo-Polish war of 1920, and later entered politics, becoming in 1937 president of the Peasant party, for which he sat in parliament 1930-35. He took part in the defence of Warsaw against the Germans, 1939, and fled to Hungary, where he was interned. Escaping to France he became the deputy president. When the Polish govt. left France in 1940 he came with it to London. Prime minister after Sikorski's death in 1943, he worked hard for Russo-Polish understanding, visiting Moscow twice before dissociating himself from the anti-Russian London govt. He returned to Warsaw, 1945, to become vice-premier in the new govt., but found himself out of sympathy and by 1947 was in opposition. His party being subjected to persecution, he escaped to England to join his wife who had remained there, was banished for life, declared a traitor, and deprived of his nationality by the Polish parliament.

**Mikulov.** Town of Czechoslovakia. In Moravia, it stands at the foot of the Polau Mts., 52 m. S. of Brno. The chief building is a castle, long the residence of the family of Dietrichstein. It has also churches, synagogues, and a monument to Joseph II. Near is the holyhill, on which are a church and many chapels. The industries are vine-growing and cloth-making. In July, 1866, the preliminary treaty between the Prussians and the Austrians was signed here. Nikolsberg is the old German name of this place, which was annexed by the Nazis in 1938.



Mikania. Foliage and flower spray of the climbing hemp-weed

**Milan.** Former duchy of Italy. The title duke of Milan was first granted by the Emperor Wenceslaus to Gian Galeazzo Visconti (*q.v.*) in 1385. Under him the territory of the duchy embraced Pisa, Bologna, Perugia, and Spoleto. On the death of his son Filippo Maria, 1447, a republic was proclaimed, but in 1450 Francesco Sforza seized power, and for eighty years, with intervals, the Sforzas held the duchy. The most famous of the Sforzas was Lodovico il Moro, who invited Charles VIII of France to enter Italy, ostensibly for the purpose of waging war against Naples. In 1500 Lodovico was deposed by the French who held the city for twelve years, Lodovico being taken prisoner to France. His son Massimiliano, restored in 1512, handed the duchy to the French three years later.

The victory of Charles V of Spain at Bicocca near Milan ousted the French from the city, and Lodovico's son Francesco was installed. On his death, in 1535, the city and the duchy were given by Charles V to Philip, afterwards Philip II of Spain. The duchy of Milan thus became an appanage of the Spanish crown. In 1714, however, it was handed over to the Aus-

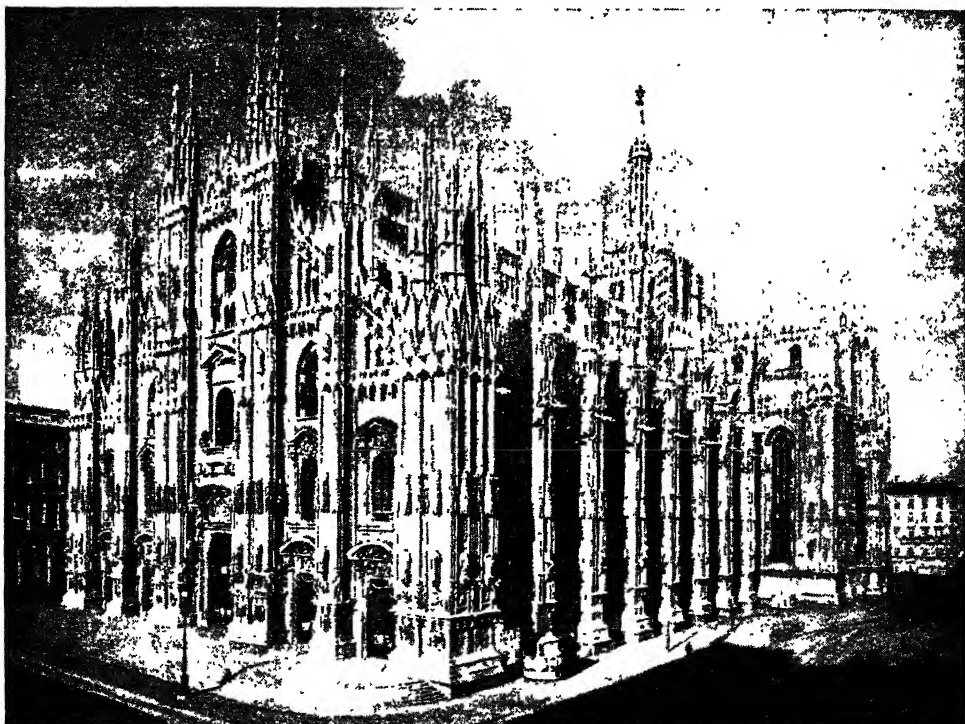
trians, and Austrian it remained until Napoleon's invasion in 1796, when it became first the Cisalpine Republic and later part of Napoleon's kingdom of Italy, 1805-14, reverting once more to Austria after Napoleon's fall. It passed to the newly proclaimed kingdom of Italy in 1859.

**Milan** (It. Milano). Province of Italy, in Lombardy. It is the prov. with the largest number of towns (245), and, fourth largest prov. of Lombardy, is the most densely populated (1948 est. 2,410,000). Area 1,056 sq. m. It comprises the largest part of the plain of Lombardy, and lies between the rivers Ticino on the W., Adda on the E., and Po on the S., while on the N. it is separated by hills from the adjoining provs. of Como and Varese. The seat of great industries (textiles, iron, rubber, tools and machinery, chemicals, etc.), the prov. of Milan represents an important factor in the economic life of Italy.

**Milan** (It. Milano). City of N. Italy, capital of the prov. of Milan, in Lombardy. The ancient Mediolanum, Milan derives its importance from its geographical situation, for it stands almost at the centre of the great plain of the Po

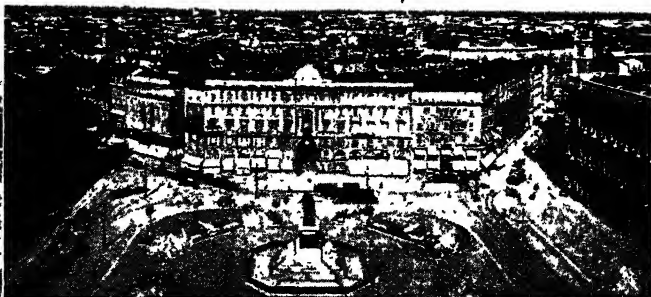
valley, E.N.E. of Turin. On Milan converge the great rly. lines and roads that cross N. Italy and connect the Danubian countries with the Rhône basin of France, and Switzerland and Germany with the Mediterranean ports of Genoa and Venice and with the S. of Italy. The three rivers of the prov., Po, Ticino, and Adda, feed several canals, in particular the Naviglio Grande, which partly encircles the city and divides it into two unequal parts. In the centre of the town the canal has been covered.

Milan is the chief financial centre and the richest commercial and industrial city of Italy. The climate is typically continental, very hot in summer and very cold in winter, with abundant snowfalls between Dec. and Feb. The city underwent great expansion during the early 1930s, but its ancient monuments, many of them very fine, were preserved. The most famous is the magnificent cathedral, or duomo, dedicated to the Virgin, which fortunately suffered only minor damage during the Second Great War. It stands in the very centre of the city, and, begun by order of Gian Galeazzo Visconti in 1386, it was conse-



Milan. West front of the cathedral, a superb example of Gothic architecture, seen from the Piazza del Duomo





Milan. Left, entrance to the Galleria Vittorio Emanuele, from the Piazza del Duomo. Right, view of the city, looking north from the roof of the cathedral

erated in 1577 and actually completed by order of Napoleon, 1805-15. This superb specimen of "decorated Gothic" architecture is the work of a series of ancient architects: the name of its first designer is unknown, but the books of the chapter include the names of Andrea degli Organi of Modena, Guglielmo di Marco, Simone da Osenigo, the German John of Fernach, and the French Jean Mignot of Paris. Faced with white marble, it is one of the most sumptuous churches in the world, with five naves, covering an area of 14,000 sq. yds., and accommodating 40,000 persons. In a splendid crypt is the tomb of S. Charles Borromeo. S. Ambrogio, founded by S. Ambrose in the 4th century, and containing his tomb, suffered badly in 1943; a Roman basilica, it was virtually rebuilt in the 12th century and later restored. Its lofty brick campanile, c. 800, is one of the earliest in Italy. Here the Lombard kings and later Roman emperors were crowned with the famous iron crown preserved at Monza (*q.v.*). The abbey church of S. Maria delle Grazie (1463) was severely damaged by air raids, 1943, though the dome remained intact. The cloister was almost entirely demolished. Leonardo da Vinci's celebrated painting, *The Last Supper*, on one wall of the refectory, remained in satisfactory condition, although the wall opposite it and the roof collapsed.

There are many other old churches, museums, picture galleries, hospitals, an academy, library, observatory, monuments, and scientific, musical, artistic, educational, and philanthropic institutions, most of which escaped uninjured, but some of which were severely, some lightly damaged. Prominent among the many fine palaces is the Palazzo della Ragione, in the centre of the

medieval city, built of brick, 1223-38. Near it is the beautiful Loggia degli Osii, 1316, in black and white marble. The beautiful Brera palace, 1651, was severely damaged, though the collection of paintings, one of the finest in Italy, together with the library of 300,000 rare volumes and 60,000 coins, had been put in safety. The Castle of the Sforza was also severely damaged.

The massive walls enclosing the inner city were destroyed long ago, and their site is occupied by promenades. The outer circle of walls, built by the Spaniards in the 16th century, is almost intact. On the N.W. side the line is broken by the handsome park; to the N.E. within the walls are the public gardens, reputed the

most beautiful in Italy, with their old trees, ponds, statues, and royal villa. Between them and the Piazza del Duomo, adorned with a handsome equestrian statue of King Victor Emmanuel II, runs the Corso, named after that king. Out of the Piazza del Duomo opened the famous Galleria Vittorio Emanuele, a great glass-roofed arcade, with a cupola 160 ft. high, which was virtually wrecked by air attack.

Milan is the centre of the Italian silk trade; other important industries include the manufacture of tires, motor-cars, machinery, aircraft, locomotives, instruments, metal bridges and roofing, dynamos, and electric fans, bicycles, electric cables and accessories, textiles, and furniture. The city



Milan. Plan of the central districts of this great commercial and industrial city of N. Italy

is also Italy's most important publishing centre, and a seat of culture and of music. Here is the world famous Scala opera house (1778), and the ancient Ambrosiana library. Pop. 1,264,389.

Milan was the seat of government of the Western emperors from Maximian, A.D. 286, until its sack by the Huns in 452. Taken by the Goths in 493, it became Theodoric's capital, but was nearly destroyed by the Goths as a reprisal for a revolt in 539. Rebuilt in the 12th century, Milan was one of the greatest of the city-republics which fought against Frederick Barbarossa. Subsequently it became the capital of a duchy ruled by the families of Visconti and Sforza. From 1805 to 1814 it was the capital of the kingdom of Italy created by Napoleon. Reoccupied by the Austrians after Napoleon's defeat, Milan and all Lombardy were freed after the battle of Solferino by King Victor Emmanuel II and his temporary ally Napoleon III; by the treaty of Villafranca, July 11, 1859, the Austrian emperor resigned all claim to the prov., which, with the city, became merged in the kingdom of Italy.

During the Second Great War Milan was attacked by the Allies from the air a number of times, the worst raids occurring Aug. 13-16, 1943, after which the city burned for a week. Indications of some of the damage suffered by famous buildings are given above; only five of the 27 churches scheduled as protected monuments escaped injury. After the Italo-Allied armistice of Sept., 1943, unrest among the people of Milan caused the Germans to proclaim a state of emergency there, seize 1,750 hostages, mount machine-guns, and bring in tanks to prevent a rising. Partisans liberated the city from German and fascist troops, April 25-27, 1945, before the arrival of the Allies. The bodies of Mussolini and his mistress Clara Petacci, executed at Dongo, Lake Como, April 28, were brought to Milan and hung head downwards in the Piazza Loreto. See Italy; Sforza; Visconti.

**Milan Obrenovitch** (1854-1901). King of Serbia. He was born at Jassy, Aug. 22, 1854, and became prince of Serbia on the assassination of his cousin in 1868. In 1882 he made his principality an independent kingdom. His adherence to Austria having alienated his subjects, he abdicated in 1889 in favour of his son Alexander and settled in Paris, where

he remained until 1894. In that year he returned to Serbia and became adviser to his son, and a power behind the throne. He was given command of the army in 1898 and put the service on a sound footing. Milan's quarrel with Alexander over the latter's marriage, 1900, led to his resignation. He was banished from Serbia and retired to Vienna, where he died Feb. 11, 1901.

**Milazzo.** Seaport of Sicily, in the prov. of Messina. The ancient Mylae, it stands on the N.E. coast, 22 m. by rly. W. of Messina. It has a commodious harbour, and its chief exports are tunny, sulphur, oil, wine, fruit, and cattle. The castle, built by Charles V and restored in the 17th century, is now a prison. In the vicinity are sulphur springs. Mylae was an outpost of Zancle in the 7th cent. B.C., and in its bay the Romans won their first naval victory over the Carthaginians in 260 B.C. Here Garibaldi defeated the Neapolitans on July 20, 1860. On Aug. 15, 1943, units of the U.S. 7th army captured Milazzo from the Germans, who had been evacuating their forces from the port to the Italian mainland. Pop. 16,000.

**Milch, ERHARD** (b. 1892). German air force officer. Born in 1892 at Königsberg, he was educated at the university there and at the Danzig technical high school. Commissioned in the army in 1912, he transferred to the flying corps in 1915 in which he served as a pilot until 1918. He became an airline pilot in 1920 and by 1926 was a leader of civil aviation. An early supporter of Nazism, he was made secretary of state for air by Hitler in 1933 and was responsible for building up the Luftwaffe contrary to the terms of the Versailles Treaty. In 1938 he was appointed chief of the air staff and chairman of the Lufthansa. He was inspector-general of the Luftwaffe, 1939-44, acting as official deputy to Marshal Goering. Arrested by the Allies in June, 1945, he was placed on trial as a war criminal at Nuremberg in Jan., 1947. The principal charges against him were participation in the slave-labour programme and the initiation of the freezing tests carried out on concentration camp inmates by the Luftwaffe. He was found guilty and sentenced to life imprisonment on April 17, 1947.

**Mildenhall.** Market town of Suffolk. It stands on the Lark, 12 m. from Bury St. Edmunds and 76 m. from London, with a rly. station. The chief building is S.

Andrew's church, mainly Perpendicular, a noble erection famous especially for its tower, chancel, and roof. There is a market cross of the 15th, and a manor house of the 17th century. It is an agricultural centre, milling being an industry. Roman remains have been found near by. In 1942 a farmer ploughing a field at West Row, near Mildenhall, unearthed a valuable collection of third century Roman silverware. Many of the articles, which were in an excellent state of preservation, are now in the British Museum. An R.A.F. station at Mildenhall was opened in 1934. It was a bomber station in the Second Great War. Market day, Fri. Pop. 3,235.

**Mildew.** Popular term of such loose application that it has little descriptive value, including as it does such diverse fungi as moulds, rusts, cluster-cups, and powdery mildews. Properly used, it should be restricted to the last named, the external blights of the order Erysiphaceae, whose mycelial threads form a cobweb-like patch on the surface of leaves and shoots, whilst their suckers attack the superficial cells. Well-known examples that may be cited are the vine mildew (*Plasmopara viticola*), pea mildew (*E. polygoni*), hop mildew (*Sphaerotheca humuli*), and rose mildew (*S. pannosa*). The last named, from its frequent occurrence on garden roses, is the most familiar.

The mealy appearance of the white patches on the leaves and stems of the rose is due to the presence of multitudes of microscopic summer spores (*conidia*), which are dispersed by the wind, insects, etc., and infect other roses. In the autumn the same patches will be found to be studded by larger black dots (*perithecia*), which remain until the spring, when the integument breaks up and releases the contained spores which, on dispersal by the wind, infect the new shoots and unfolding leaves. The abstraction of nutriment from the leaf-cells produces starvation and withering of the plant. Flowers of sulphur dusted on the patches, or the same boiled in water with an equal weight of quicklime and the clear liquor sprayed, stops the attack. See Fungus; Phycomycoetes; Spore.

**Mild Steel.** A generic term applied to all steels of low carbon content. No sharp division can be made between mild steels and medium carbon steels, but as a rule a steel is called mild if the carbon content does not exceed 0.3 p.c.

Similarly a high carbon steel is one containing more than 0.6 p.c. The lowest carbon steels are used for wire and rails for electrical conductors, while the steels ranging from 0.07 to 0.15 p.c. carbon are the most widely produced of all. These are made into the form of rod and wire for many uses, such as nails, rivets, and ferro-concrete bars. Both these steels are usually made with some residual oxygen left in the steel; during cooling this reacts with carbon giving carbon monoxide gas bubbles which increase the volume of the ingot and reduces the pipe. Ordinary mild steels, containing 0.15 to 0.25 p.c. of carbon, may be used for deep forging, case-hardening, or for sections for joists, channels, and angles. See Metallurgy; Steel.

**Mildura.** Town in Victoria, Australia. It is 351 m. N.W. of Melbourne and is mainly known as the centre of the irrigation scheme on the Murray river, on which the state spent £3,000,000 in dealing with 150,000 acres. Mildura has fruit packing and preserving factories. Pop. est. 7,000.

**Mile.** Measure of distance. As first used by the Romans it was approximately 1,617 yards. The British statute mile is 1,760 yards, and was legalised in 1593. The mile has varied considerably; the old Scottish mile was 1,984 yards; the Irish 2,240 yards; the old London mile 1,666 yards, etc. The old English mile consisted of ten furlongs; and a mile equalling a little over  $1\frac{1}{2}$  present-day miles was extensively used in the N. of England and in Wales till the 16th century. The nautical mile, equal to 1 minute of latitude, is 6,082.66 ft. The Admiralty mile is 6,080 ft. See Weights and Measures.

**Mile End.** A district of E. London. Once a hamlet of Stepney parish, it now forms the central and N.E. parts of Stepney bor. Through it runs the Mile End Road, probably the broadest thoroughfare in London, connecting Whitechapel Road and Bow Road. Part of the district between Commercial Road East and Mile End Road is known as Mile End Old Town. Notable buildings include Trinity Hospital, 1695, almshouses for master mariners and mates and their wives or widows; the Vintners' almshouses, 1676, rebuilt 1802, but almost entirely destroyed during the Second Great War; the People's Palace, opened 1887, destroyed by fire, 1931, but rebuilt, 1936; and Queen Mary College of the Uni-

versity of London; the Great Assembly Hall, associated with the work of F. N. Charrington; the Old Town Workhouse, and S. Benet's church rendered derelict by war damage. In the Jews' Burial Ground, closed 1858, are the graves of Lord Beaconsfield's grandfather, Benjamin D'Israeli, and Baron Nathan Rothschild. Captain Cook, the navigator, lived in the Mile End Road. At Mile End Green, now Stepney Green, Wat Tyler assembled his followers for the attack on London. Mile End is said to have been named from the fact that it begins a mile from the old city wall at Aldgate.

**Miles, EUSTACE HAMILTON** (b. 1868). British athlete and food reformer. Born at Hampstead,



Eustace Miles,  
British food reformer

Sept. 22, 1868, he was educated at Marlborough and King's College, Cambridge. He won the amateur championships at tennis, rackets, and squash in America in 1900, and was amateur tennis champion of England, 1898-1903, 1905-06, and 1909-10. The world championship at rackets fell to him in 1902, and that at tennis in 1898-1903 and 1905. A vegetarian, Miles wrote on health and food reform, and founded restaurants and food manufacturing companies to further his theories. He wrote also on history, philology, and sport.

**Milesian.** Legendary name of an early Irish race. It is a latinised form of Miled, perhaps an equivalent of a Celtic gulam, or warrior. Tall, fair-haired, blue-eyed Goidelic Celts, the Milesians mingled with and subdued the earlier population. One tribe, the Scots, whose name was given in Latin annals to the whole people, migrated to northern Albion (Scotland).

**Miles Platting.** A suburb of Manchester, England. It comprises the eccles. dists. of S. John and S. Luke, and has a rly. station  $1\frac{1}{2}$  m. N.E. of Victoria, Manchester. Pop. 14,000.

**Milestone** (Lat. *lapis miliaris*). Post of stone, metal, or wood set up to mark distances along roads. Inscribed pillars at equal distances of 1,000 *passus*—equivalent to 1,617 English yds.—marked distances on roads emerging from the gates of Rome. Augustus built in the forum at Rome a bronze-gilt pillar, *aureum miliarium*, or golden

milestone, upon which were inscribed the names and distances of the chief towns on roads leading out of the 37 gates. Under Julius Caesar milestones marked distances along all the roads of the empire.

When the Romans cut their great military ways across Britain, distances were marked by cylindrical shafts 6 ft. high. One set up in the 4th century is on the road between Carlisle and Corbridge-on-Tyne, and is the oldest standing milestone in Britain. Another set up at Castleford c. A.D. 50, is now in a museum at York. Roman milestones invariably bore details of the construction of the roads they marked, and usually the name of the ruling emperor. In the museum at Chesters, Northumberland, are imperial milestones recording roads built from the time of Severus Alexander to that of Constantine. After the withdrawal of the Romans, milestones ceased in Britain until after the Norman conquest. There is a Norman example on Castleton Ridge, near Hutton-le-Hole, Yorks.

Medieval milestones in Britain were not set up by any established authority, but generally by private persons either for publicity or out of philanthropy. Measurements were always to local standard, and the mile varied from county to county. In 1593 the mile was standardised throughout the kingdom at its present length of eight furlongs, and most roads were milestone-stoned, though on a local and voluntary basis.

In 1698 it became obligatory upon the turnpike trustees to mark with a stone every mile of road upon which they levied tolls. This responsibility was transferred to



Milestone, Clapham Common, London

local authorities and parishes in 1773. Many milestones in Sussex were of wood, and in Lancashire of iron. Holes in some milestones on lonely moorland roads were drilled by high



Roman  
milestone

waymen to enable them to watch for victims. When stage coach services began in England, the operators were obliged to base their fares by distance according to milestones, and this obligation was inherited by the railways. By the General Highways Act of 1835, local authorities ceased to be responsible for milestones. By Defence Regulation of July 19, 1940, local authorities were required to remove all milestones for the duration of the Second Great War, as their presence might have assisted German parachute troops and enemy agents. Most were restored after the war.

**Milestones.** Play by Arnold Bennett and Edward Knoblock, first produced at the Royalty Theatre, London, March 5, 1912, with Dennis Eadie in the chief part of John Rhead. It presents an English middle-class family at three periods of emotional domestic crisis involving three generations, in the years 1861, 1885, and 1912. The picture of social changes through fifty years and the accuracy of its period detail are as characteristic of the play as its observation of the more fundamental changes which increasing age may work upon individual characters. The play has been revived three times in the West End as well as remaining popular with repertory and amateur companies; and has gained in piquancy by the fact that the 1912 scene, originally contemporary, has itself become increasingly "period."

**Miletus.** Ancient city of Asia Minor. Standing on the Gulf of Latmos, near the mouth of the

Maeander, it was the chief town of the Ionian colonies of Greece. A great commercial city, it was famous for its woollen goods, traded with the whole Mediterranean coast, and established many colonies in the Propontis and Euxine, as well as Naucratis in Egypt. Taken by Croesus, and in 557 B.C. by the Persians, it headed the great Ionian revolt against Persia, but was destroyed on its suppression in 494 B.C. Captured by Alexander, it passed to the kingdom of Pergamum, and to Rome. The birthplace of Thales and other Greek writers, it is poorly represented by the modern Palatia.

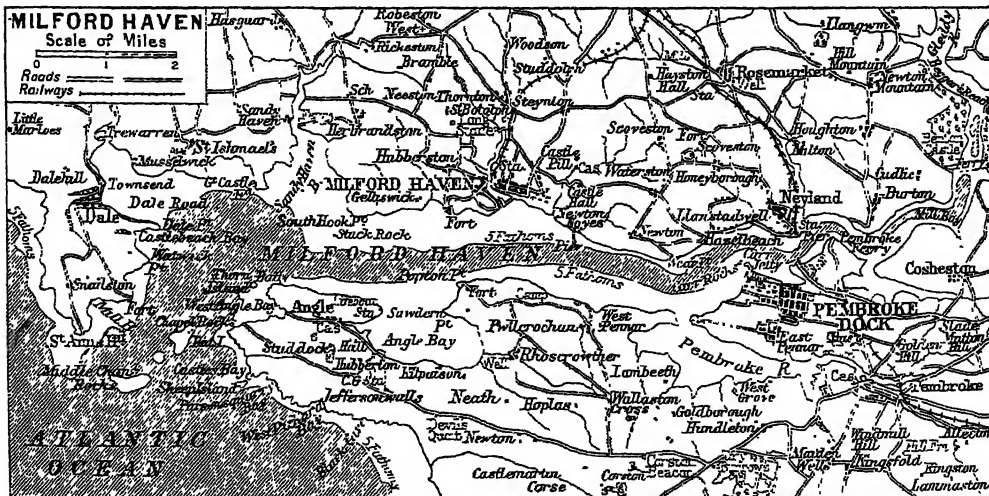
**Milford** or **MILFORD HAVEN.** Seaport and urban dist. of Pembrokeshire, Wales. It stands on the N. side of Milford Haven, 9 m. S.S.W. of Haverfordwest, and has a rly. station. Milford owes its origin to R. F. Greville, who in 1790 planned a port here as a centre for the trade with Ireland. Soon afterwards the government established a dockyard here, but in 1814 this was transferred to a spot on the S. side of the haven, which was named Pembroke Dock. Milford has good dock accommodation and is a yachting centre. Earthworks and other antiquities abound in the neighbourhood. Pop. est. 12,000.

**Milford.** Town of New Haven co., Connecticut, U.S.A. Situated at the mouth of the Housatonic R., on the Wepawaug R., and Long Island Sound, 9 m. S.W. of New Haven, it is served by rly. A township, retaining the historic New England form of town government, it has produced oysters,

clams, and other shellfish since the 17th century. Manufactures include electric motors, automobile and boat equipment, rivets and other small metal products, and synthetic rubber products. It was settled as a "church-state" community in 1639 and incorporated as a town in 1640. Pop. 16,439.

**Milford,** SIR HUMPHREY SUMNER (b. 1877). British publisher. Born Feb. 8, 1877, he was educated at Winchester and New College, Oxford, and in 1900 joined the Clarendon Press. In 1913 he became publisher to Oxford university, a post he held until his retirement in 1945. During 1919-21 he was president of the Publishers' Association of Great Britain and Ireland. In 1936 he was knighted. Sir Humphrey was joint editor of the Oxford Book of Regency Verse; originated the Oxford Dictionary of Quotations; and edited the works of Borrow, Clough, Cowper, and Leigh Hunt.

**Milford Haven.** Opening of the Atlantic Ocean. On the coast of Pembrokeshire, it is regarded as the finest natural harbour in England and Wales. It extends inland for 17 m., being from one to two miles broad. Milford is on the N. side, and on an inlet on the S. is the royal dockyard of Pembroke Dock. The estuary of the E. and W. Cleddy rivers, the haven has the Welsh name of Aberdaugleddau. Its position and safety made it in the Middle Ages the chief harbour for intercourse with Ireland. Fortified by Elizabeth and in more modern fashion in the 19th century, it was a flying boat base in the Second Great War.



Milford Haven, Pembrokeshire. Map of the natural harbour in South Wales, showing the position upon it of the towns of Pembroke Dock and Milford Haven

**Milford Haven, 1st MARQUESS OF.** British politician. Louis Alexander (1854-1921), son of



1st Marquess of  
Milford Haven  
Russell

Prince Alexander of Hesse, was born at Graz, May 24, 1854, became a naturalised British subject on entering the navy in 1868, and married a grand-daughter of Queen Victoria. Changing his German name of Battenberg to the English equivalent, Mountbatten, in 1917, he was created marquess of Milford Haven. He was director of naval intelligence 1902-05, and commanded the Atlantic fleet 1908-12. Then he became first sea lord, retiring in view of the anti-German feeling against him soon after the outbreak of the First Great War in 1914. He died Sept. 11, 1921. A Life by M. Kerr appeared in 1934.

His grandson, David Michael Mountbatten, 3rd marquess (b. May 12, 1919), succeeded to the title in 1938, was educated at Dartmouth, and served in the Second Great War.

**Milford-on-Sea.** A town of Hants, England. A small seaside resort on the coast between Christchurch Bay and the Solent, it is 3 m. S.W. of Lymington and 4 m. N. of the Needles. Of unusual design are the 13th century tower and steeple of All Saints' church. Hurst Castle, 2½ m. to S.E., was erected by Henry VIII to guard the entrance to the Solent at the end of a bar of shingle similar to Chesil Bank. Charles I was confined here on his journey from the Isle of Wight to the scaffold at Whitehall in January, 1649.

**Milford Sound.** Fiord in the S.W. of South Island, New Zealand. It is in Lake co., 217 m. N. of Bluff by sea, and is reached overland from Lake Te Anau. Mitre Peak and Tutoko rise sheer from the water, the former to a height of 5,560 ft., the latter to 9,042 ft. The sound forms part of a national reserve, comprising also the neighbouring fjords and covering more than 2,000,000 acres of magnificent scenery. The Sutherland waterfall, 1,904 ft. in height, and Lake Ada are its chief attractions.

**Milhaud, DARIUS** (b. 1892). French composer. Born at Provence, Sept. 4, 1892, he studied at the Paris conservatoire, and after the First Great War was a member of the group known as Les Six. He displayed remarkable gifts both as

satirist and as tragedian. His incidental music to Greek drama reached a climax in his "orchestration of stage noises" in the music to the Chœphori of Aeschylus. In *Le Boeuf sur le Toit*, 1919, he exploited the humorous possibilities of the Brazilian tango, and parodied musical comedy conventions in the ballet *Le Train Bleu*, 1924. Many of his humorous works created sensations, e.g. the setting of a florist's catalogue for voice and chamber orchestra. His later works included a number of string quartets, songs, sonatas, and the *Cortège Funèbre*.



Darius Milhaud,  
French composer

**Military Academy, ROYAL.** Title of the military training college maintained at Sandhurst by the British War Office for the instruction of cadets before they are commissioned in the Army. Until 1939 the title was borne by the training institution at Woolwich, which trained cadets for commissions in the Royal Artillery and Royal Engineers. Since 1946 cadets for all branches of the army have been trained at Sandhurst. The corresponding R.A.F. college is at Cranwell and that of the Royal Navy at Dartmouth. See Commission; Sandhurst.

**Military Band.** Combination of wind and percussion instruments used for military purposes, though the term is also generally applied to any similar civilian combination.

In Great Britain there is no fixed standard, but a large military band may contain 2 piccolos and 2 flutes in E flat or D flat, 4 hautboys, 2 E flat clarinets, 8 1st, 6 2nd and 4 3rd B flat clarinets, 1 alto clarinet in E flat, 4 saxophones in E flat and B flat, 4 bassoons, 1 double bassoon, 6 1st and 4 2nd cornets in B flat, 2 trumpets in E flat or B flat, 4 horns in E flat or F, 2 flügelhorns in B flat, 2 baritones in B flat, 2 euphoniums in B flat or C, 2 or 3 tenor trombones in B flat, 1 bass trombone, 5 bombardons in E flat and B flat, 2 string basses, kettle drums, side drums, bass drum, cymbals, triangles, bells, glockenspiel, etc.

**Military Cross.** British military decoration for gallantry. Instituted on Dec. 31, 1914, as a reward for officers of the rank of captain and below and for warrant officers. It can be awarded to officers and warrant officers of the

R.A.F. for gallant services on the ground, as distinct from flying. It also can be awarded to naval officers attached to military formations. Warrant officers awarded the M.C. are eligible for a gratuity of £20 on promotion to a commission, on transfer to the reserve, or on discharge without pension. If discharged with pension, they are eligible for an additional sixpence a day. The decoration is a silver cross bearing the royal cypher in the centre and the imperial crown at the end of each limb. It is suspended from a white ribbon with a central stripe of purple and is worn immediately after the D.S.O. Over 40,000 Military Crosses were awarded in the First Great War and 11,000 in the Second Great War. (See Medals colour plate.)

Belgium has a Military Cross which was instituted in 1885 and is awarded to officers who have served 25 years in the army. The Greek Military Cross was instituted by Venizelos in 1917 to reward gallantry in the field by Greek Nationalist troops, but is now more or less complimentary. The Czechoslovak Military Cross for gallantry was instituted in 1939.

**Military Engineering, THE SCHOOL OF.** A British military training centre, official headquarters of tuition in engineering for the army. The school is at Ripon, Yorks, with a wing at Chatham, Kent. There officers and men of the Royal Engineers (*q.v.*) undergo courses of instruction up to two years. The syllabus includes courses in fortification, surveying, building construction, general science, and the maintenance of refrigerating, mechanical, and electrical equipment. Special courses are given in field engineering, bridging, and in preparing officers for university engineering examinations. The school's head is a general officer known as commandant.

#### **Military Knights of Windsor.**

Body of retired military officers, forming part of the order of the Garter (*q.v.*). When Edward III instituted the order in 1349 with 26 companions, he included in the foundation an equal number of canons and of veteran knights. The latter, known as Poor Knights, because wounds or other misfortune made them unable to support themselves suitably, he endowed with an annual income and allotted quarters in Windsor Castle. Elizabeth reduced their number to 13 and re-endowed them.

In the reign of Charles I five more knights were added on a



lower foundation. In 1919 an Act of Parliament was passed, decreeing that no further appointments should be made to the lower foundation, which will be absorbed, so that in future the knights will again number 13. One of them is governor of the rest, and he is given the rank of major-general if he does not already hold it. Appointments are made by the sovereign, and the knights are under the orders of the governor of Windsor Castle. They have residences in the castle and a small annual stipend. They are the oldest military brotherhood in existence, and the only military body in England entitled to wear the national badge of St. George.

**Military Law.** The code of law to which a person becomes subject on joining the British army. It is contained in the Army Act, the king's regulations, royal warrants, army orders, and army council instructions. There are similar codes for the Royal Navy and Royal Air Force in the Naval Discipline Act and Air Force Act.

**Military Medal.** British military award for gallantry. Instituted in March, 1916, it may be conferred on warrant officers, n.c.o.s, and men of the army; non-commissioned ranks of the women's auxiliary services; and upon warrant and non-commissioned personnel of the R.A.F. for gallantry on non-flying duties. The medal, of silver, has on the obverse the royal effigy and on the reverse the inscription For Bravery in the Field, surrounded by a wreath and surmounted by the royal cipher and crown. It is suspended from a dark blue ribbon having three white and two crimson stripes. Some 60,000 Military Medals were awarded in the First Great War and approximately 11,000 in the Second Great War. (See Medals colour plate).

The French award a military medal for gallantry by native troops in the colonial army. It is distinct from the Médaille Militaire (*q.v.*). The Belgian Military Medal was instituted in 1902 for n.c.o.s and men of the army.

**Military Police.** Corps of the army detailed to enforce discipline and bearing, to maintain law and order among soldiers, and to perform also many of the same functions as do the civil police among the civil population. From the reign of Henry VIII there had been attached to the British army a civilian corps called Provost Marshals (*q.v.*), who were responsible for controlling the numerous camp followers. Gradually their

work became more and more associated with the troops, until eventually military police duties were undertaken by pickets, which were composed of ordinary soldiers detailed from their units and temporarily invested with police authority for a specified period of duty, usually 24 hours. This practice still exists in the form of regimental police, whose authority is confined to the particular camp, barracks, or regimental limits of their unit, and is restricted to ensuring that men walking out are correctly dressed and of good behaviour. The provost marshals became administrative officers responsible for the general supervision of soldiers' conduct.

In 1855 a corps of military foot police was established as the executive troops of the provost marshal and empowered to arrest any soldier not provided with a pass; to maintain order in garrison towns; to control military traffic both on the highway and on army lines of communication; to guard certain military installations; to prevent pilfering of military stores; and, in conjunction with the intelligence service, to apprehend spies. In 1877 a corps of military mounted police was established, and in 1926 the two corps were amalgamated.

As far as possible the enforcement by the Corps of Military Police of discipline and bearing of men off duty is done by example and checking. To that end a high standard of conduct, smartness, and integrity has become a corps tradition. Military police are recruited from men specially selected from other units, and they become n.c.o.s on probation.

At the outbreak of the Second Great War the Corps of Military Police had a strength of 3,500, but the mechanisation of the army necessitated a considerable reorganization. In 1940 three new branches were formed; C.M.P. (S.I.B.), special investigation branch, the "C.I.D." of the army; C.M.P. (T.C.), the traffic control companies; and the C.M.P. (V.P.) police for guarding vulnerable points. During the N. Africa campaigns traffic control companies were with the forward troops to mark tracks and direct armour and other traffic through the minefield gaps. Beach provost companies were formed for the N. African landings in 1942, and went ashore with the assault troops at Anzio and Salerno. All branches of the corps took part in the Normandy invasion in 1944 and

accompanied the army in every operation leading to the final German surrender. The corps was then charged with enforcing the regulations of the military government imposed in the occupied territories. At the end of the war the corps had a strength of 35,000 and had suffered heavy casualties. In 1946 a special army order announced that in recognition of their service the corps had been authorised by the king to use the prefix Royal.

Members of the corps wear red cap covers (hence their nickname "red caps") and a black armband with the letters M.P. The Royal Navy and the Royal Air Force maintain their own corps of police.

**Military School of Music, ROYAL.** For the activities of this school for military bandsmen see under Kneller Hall.

**Military Service Acts.** Acts passed by the British government rendering British subjects liable to service in the armed forces. The first military service act was passed by the Asquith government in the First Great War, became effective on Feb. 10, 1916, and provided for the conscription of all single men aged between 18 and 40. Exemptions were made in favour of conscientious objectors, ministers of religion, and persons engaged in work of national importance. In June, a second act rendered all males between 18 and 41, except those exempted by the first act, liable for military service. The second act also retained in the army time-expired soldiers. On April 15, 1918, the heavy British casualties resulting from the German offensive led to a third act, raising the age of liability for service to 50. None of these acts applied to Ireland, and all lapsed with the signing of the peace treaty in 1919.

In March, 1919, a fourth act came into force to ensure drafts for the army of occupation in Germany. It gave the government power to extend until April 30, 1920, the compulsory service of any man already in the armed forces at the end of the war.

In 1939 a British Military Training Act rendered all men of 20 liable to serve in the army for six months followed by three and a half years in the Territorial Army. This act was replaced by the National Service, Armed Forces, Act of Sept. 1, 1939. It provided that every male British subject in Britain between 18 and 41 should, from time to time by proclamation, become liable for service in the



armed forces. Provision was made, however, for the exemption of persons engaged in a variety of occupations considered essential to the war effort. On Dec. 18, 1941, the National Service (No 2) Act was passed. This raised the age for compulsory military service for men from 41 to 51, while unmarried women between 18 and 31 became liable to serve in the uniformed auxiliary services of the crown.

Under a plan announced in June, 1946, men called up during 1947 served for two years, those during 1948 for progressively shorter periods down to 18 months for Dec. recruits. A new National Service Act, June, 1947 (effective 1949), reduced full-time service to one year, followed by 60 days' part-time training, in an auxiliary service, spread over six years; but before it came into effect an amending Act, Nov., 1947, made full-time service 18 months, followed by 60 days' part-time training spread over four years.

**Militello.** Town of Sicily, in the prov. of Catania. It is 18 m. S.W. of Catania, with which it is connected by rly., and carries on a trade in oil, wine, and silk. The town was destroyed by earthquake, 1693.

**Militia** (Lat. *miles*, soldier). Civilians enrolled as an auxiliary military force and periodically embodied for instruction and drill. On the Continent, the name is frequently given to the second line troops of a national army, and personnel of the militia consists of reservists who have completed military training as conscripts. In Great Britain, the militia as it existed until 1908 was a constitutional force raised under the sanction of parliament for home defence and enlisted locally by cities or counties. It could be sent out of the country only if the men volunteered, and then only with the consent of parliament. In few instances had its personnel served in the regular army.

Historically, the British militia dated from Anglo-Saxon times, when all landholders were obliged to bear arms as a quit or body rent for the land they occupied. This was expanded by Alfred the Great into the *fyrd* (*q.v.*). With the development of feudalism, which raised its armies from the fiefs (*q.v.*), the *fyrd* ceased to be important. When the conflict between crown and barons reached a head early in the 13th century, the *fyrd*, or militia, provided the bulk of the royal troops. As the country became more settled, however, the militia again fell into decay.

Following the threat of the Spanish Armada, a special home defence force was raised on a county basis by the lords lieutenant, the expense of arming and equipping the troops being defrayed by the counties, while the officers were commissioned on a property qualification. The troops were mainly volunteers, but when the strength fell below establishment the deficiency was made up by ballot. In 1604 James I revived the *fyrd* as a force of 160,000 men called the trained bands. During the Civil War, the trained bands generally sided with parliament, and a number of them became officer-producing units for the Commonwealth army.

#### 17th-20th centuries

After the restoration, a new militia was established, but except in London was abolished 1662. In 1688 an act authorised the raising of the militia for one year, and for some time afterwards it was sanctioned annually, as is the regular army today. This militia was called out during the Jacobite rebellions of 1715 and 1745. Its embodiment in 1745 showed it to be thoroughly inefficient, and in 1757 a new militia act made householders liable for service, men between 18 and 45 being chosen by ballot to serve for a period of three years. The force received an annual training and in its first year raised 30,000 men. Men drawn for service could buy a substitute for £10, and many householders formed militia clubs which, on insurance principles, purchased a substitute for any member drawn for the militia. Until 1802 only Protestants were liable for militia service or accepted as substitutes.

During 1759-62, 1778-83, 1792-1802, 1803-1816, and 1854-56, the militia regiments, embodied to form the home garrisons in the absence of the regular army overseas, reached a high degree of efficiency, and every inducement was offered to the men to enlist individually in the regular army, the War office at one time offering militiamen a bounty of £40 to transfer.

In 1867 one-fourth of each battalion of militia was invited to accept the same liability to foreign service as the army reserve, in consideration of an annual bounty of 20s.; these volunteers were known as militia reservists. The militia did good service during the S. African War of 1899-1902, but their voluntary offer to go abroad was on condition that the men should serve under their own officers like a regular unit. Five years later,

1907, R. B. Haldane brought the militia into his scheme for an expeditionary force, by abolishing all units as militia and reviving most of them as special reserve battalions, whose function in war was to furnish drafts for the regular battalions. In 1914-17 virtually all reinforcements for the 1st and 2nd battalions at the front, both officers and men, were furnished by the 3rd (old militia) battalions, then called the special reserve.

After the First Great War the title of militia was revived, but it remained a mere name in the army list, and was eventually merged into the Territorial Army. In 1939 the name was again revived and given to the conscript force called up under the compulsory military service Act of April of that year. With the introduction of general conscription at the beginning of the Second Great War, the term was again dropped, and thereafter the only militia units existing in the British Commonwealth were those of Australia, Malta, Bermuda, and the Channel Islands, all of which were on a voluntary basis.

Under the fascist regime, Italy had an active militia which was, in effect, the private army of the ruling political faction. A similar organization, the *Schutzstaffeln* (S.S.), was maintained in Germany to support the Nazi party.

In the U.S.A. there is a form of militia called the National Guard, established in 1933 on a federal basis to incorporate the various state guard units. Enlistment is voluntary, but in emergency the president may order the National Guard into the active service army. During the Second Great War 19 National Guard divs. served overseas with the U.S. armed forces. In peacetime the National Guard has an authorised strength of 250,000 men and may be called out to maintain order in the event of civil disturbance. See Army, British; Territorial Army.

**Milk** (A.S. *meolc*, milk). The fluid secreted in the mammary glands of all female mammals immediately after parturition, to provide nourishment for their young. The composition of milk, which is a mixture of fats, carbohydrates, proteins, and mineral matter dissolved or suspended in water, varies widely. The total solids content is highest in the milk of the porpoise and the whale (55 p.c. including 45 p.c. fat), lowest in that of the mare and the mule (9 p.c. including 1.2 p.c. fat).

The milk of the cow has, since the middle of the 19th century,

become of great importance in the diet of the peoples of the British Commonwealth, the U.S.A. and the countries of N.W. Europe. In total solids content, cows' milk is similar to human milk, but, as the accompanying table shows, the proportion of the various solids differs considerably. Moreover, composition varies from one individual to another, and from one breed of cow to another.

	HUMAN	COW
	Per cent	Per cent
Water	87.55	87.3
Fat	4.0	3.7
Sugar (lactose)	7.0	4.75
Caseinogen	0.5	3.1
Other proteins	0.75	0.4
Ash	0.2	0.75
	100.00	100.00

For the feeding of infants, cows' milk can be humanised by the addition of lactose, cream, and water, to reduce the proportion of proteins and increase the proportion of milk sugar while maintaining the same percentage of total solids. Most children, however, can take unmodified cows' milk from an early age.

The fat in milk is an imperfect emulsion. If milk is left standing the fat globules clump together and gradually rise to the surface of the milk. This is known as creaming. The milk sugar, albumen, and globulin, and part of the ash are in solution, and the caseinogen in colloidal suspension. The proteins, casein and albumen, contain all the amino acids known to be essential to life in young animals; the butter fat differs from vegetable fats in that it contains a higher percentage of volatile and unsaturated fatty acids, which are believed to be more digestible than the saturated fatty acids. In addition milk contains the fat soluble vitamins A, D, and E, and the water soluble vitamins, B<sub>1</sub>, B<sub>2</sub>, and C. It is a perfect food for the young. For the adolescent and the adult its inclusion in reasonable proportions forms a valuable addition to the diet.

By selective breeding the dairy cow has become a highly efficient milk producing machine. Individual cows have produced more than 3,000 galls. of milk in a lactation (approx. 12 months). The average annual quantity per cow sold off farms in Great Britain in 1939 was 550 galls. Owing to shortage of imported feeding stuffs, it fell during the Second Great War to approximately 500 gallons, but by 1948 had returned to nearly the pre-war figure.

The British herds which give good milk production are the Ayrshire, Dairy Shorthorn, Friesian, Guernsey, and Jersey; the first three give the greatest yields of milk, the Channel Is. breeds produce milk of the highest butter fat content. Red Polls in East Anglia, Welsh Blacks in Wales, South Devons in Devon enjoy popularity.

**MILK CONSUMPTION.** Milk consumption in Great Britain in 1939 was estimated to be 0.4 pints a head per day. The national milk scheme of 1941, which provided free or cheap milk to pregnant and nursing mothers and to children under 16, and the milk in schools scheme which provides free milk in school to all children under 16 attending school, have increased average consumption to 0.6 pints a head per day. Production between 1939 and 1947 increased by only 16 p.c.; so priority claims under the two schemes could be met only by restricting general adult consumption and reducing the quantity made into manufactured dairy products. Sales off farms in Great Britain in 1938-1939 were 1,253 million galls., of which 855 million galls. were consumed liquid, 398 million galls. were made into dairy produce. In 1945-46 total sales were 1,405 million galls., of which 1,258 million galls. were consumed liquid, 147 million galls. were made into dairy products. In Canada 0.85 pints of milk a head is consumed per day, in Scandinavia over one pint a day.

During the 20th century increasing attention has been given by local authorities, milk producers, and distributors to the hygienic production and handling of milk. Bovine tuberculosis may be transmitted through milk as also may human diseases like typhoid fever, diphtheria, etc. These pathogenic dangers can be eliminated by pasteurisation (*q.v.*).

The elimination of infected cows and the gradual increase in the number of tubercle free herds received official encouragement in 1923 under the Milk Special Designations Order, when tuberculin tested milk (including certified milk) received recognition, and its sale at a special price to cover the milk producer's extra expenses was permitted. By 1948 nearly 17 p.c. of the milk produced in Great Britain was tuberculin tested. A tuberculin tested herd may, however, include cows suffering from abortion or mastitis, so that the milk it gives is free from only one of the three bovine diseases which may be transmitted by milk.

**MILK PRESERVING.** Milk in excess of needs produced during the summer can be preserved for subsequent use either by concentration and storage in hermetically sealed cans or by drying. Unsweetened condensed milk, normally concentrated 2½ times to include 31 p.c. of total solids, is preserved by sterilisation. The high sugar concentration of sweetened condensed milk, which contains 31 p.c. of milk solids plus 40 to 42 p.c. of added cane sugar, prevents the growth of bacteria.

Milk can be dried by:

- Roller Drying**, in which the milk, finely sprayed on to steam heated revolving rollers, is scraped off after less than one revolution of the roller as "milk paper," and subsequently ground to powder. This form of dried milk, which keeps well, is the type used as national dried milk and in most of the proprietary infant foods.
- Spray Drying**, in which milk, usually concentrated to about 40 p.c. solids by evaporation in vacuum, is sprayed into a large enclosed chamber through which heated air is rapidly moving. The droplets of milk rapidly lose their moisture to the hot air and fall as a fine powder to the bottom of the chamber, from which the powder is removed mechanically. This powder is almost 100 p.c. soluble and, when reconstituted, very closely resembles pasteurised milk, with the exception that the cream will not rise owing to the fine division of the fat globules effected when spraying into the drying chamber. This type of dried milk was used extensively during the Second Great War in feeding troops operating under difficult conditions. Separated milk, dried by the spray process, is much used in the manufacture of ice cream and in the chocolate and sugar confectionery industries.

**E. Capstick, M.Sc.**

**Milk.** River of Canada and the U.S.A. Rising in the Rocky Mts. of Montana, near the Alberta boundary, it flows E. through Alberta for about 200 m. and then for a further 300 m. through Montana to the Missouri.

**Milk Bar.** Bar for the sale of milk and milk drinks for consumption on the premises; including "milk shakes" with various fruit and other flavours, malted milk and proprietary milk drinks, ice-

cream, tea, coffee, and cocoa. Cakes, sandwiches, and other light refreshments are also available.

The first milk bars were opened in Australia in the early 1930s, and in 1935 an Australian, Hugh D. MacIntosh, came to England and opened the first British milk bar in Fleet Street, London, Aug., 1935. The idea won immediate popularity, and, with encouragement from the Milk Marketing Board, milk bars spread throughout the country. In 1947 there were some 700 registered with the Milk Bars Association in Great Britain. This association lays down certain standards for the equipment and storage plant of milk bars, which are compelled to store their milk in refrigerated containers below 42° Fahr. The sale of milk and milk drinks in the U.S.A. takes place at similar bars installed in drug stores.

**Milking.** The process of extracting milk from the cow or goat. It is usually done by hand, but machine milking has become widely used, as this saves labour. The udder of the cow consists of four separate sections or quarters, two fore, and two hind, each quarter having a teat of its own. Milk flow is controlled by a hormone oxytocin, and some stimulus given just prior to milking may increase the yield. Hand milking is carried out by grasping the teats part of the way round and pressing them against the palms by the finger tips. The pressure should be horizontal, commencing at the top of the teat, and worked downwards. A quick rhythmic action is best, with movement coming from the wrists and not the elbows. The fore quarters are milked first, then the hind, but it is necessary to milk the fore quarters again, and often individual quarters separately, to ensure efficient stripping. Milk left in the udder reduces yield. In addition, the strippings are richest in fat and other food nutrients.

Machine milking combines an action of pressure, release, and suction. Hand stripping after machine milking, though common, can be avoided with some cows, by applying slight downward pressure to the base of the teat cups and at the same time massaging the udder. Whatever the milking practice, cleanliness, quietness, and careful handling of the animals are essential. See Dairy Farming.

**Milk Marketing Board.** Organization of milk producers in England and Wales, set up Oct., 1933, on the instance of the National Farmers' Union, to administer a national marketing scheme

for milk. The board has statutory powers under the Agricultural Marketing Acts of 1931 and 1933, and no non-member is permitted to sell milk. It came into existence on the vote of over 96 p.c. of the milk producers in the country. An entirely self-governing body, it has power to vote itself out of existence at any time.

Of the 17 members of the board, twelve are the elected representatives of the regions into which the country is divided for the purposes of the marketing scheme, three are nationally elected, and two are co-opted. Regional committees advise on the board. The board operates a pooling scheme to ensure a satisfactory price to milk producers, collects all monies from over 9,000 dairymen each month, and pays out to nearly 160,000 producers, and with a fleet of over 6,000 road vehicles collects all milk from farms and delivers it to its first destination. It has introduced various schemes for grading supplies, with premiums for the higher grades. The provision of free milk in schools and of free or cheap milk to mothers and children was developed from experiments carried out by the board before the Second Great War.

The board established cattle breeding centres, and set up a number of creameries which provide information on the costs of processing and the manufacture of dairy products.

**Milk Sugar.** Variety of sugar found in milk. It is recovered from whey obtained in the manufacture of cheese. Milk sugar appears as sweet, rather gritty crystals, partly soluble in water, and is used in pharmacy. It is not so sweet as cane sugar, and chemically is better known under its alternative name of lactose (q.v.).

**Milkwort** (*Polygala vulgaris*) OR ROGATION FLOWER. Perennial herb of the family Polygalaceae.



Milkwort. Flowering stems of this meadow herb

A native of Europe (including Britain), N. Asia, and N. Africa, it has short, wiry stems and somewhat leathery, oblong leaves. Its flowers are white, pink, blue, or purple. It grows among grass in meadows and on heaths, and cows eating it

were formerly supposed to yield more milk than ordinarily.

**Milky Way.** This luminous band of stars stretching across the sky is more correctly called the Galaxy (q.v.).

**Mill** (Lat. *molere*, to grind). Originally a machine used for grinding. To mill means to reduce something, corn, for instance, to very small particles. It is also used for the process of giving a raised edge to coins. From its use for a machine the word has come to be used also for the building in which the machinery is, e.g. a flour-mill, and other buildings containing machinery, e.g. a cotton mill.

**MILL, JAMES** (1773-1836). British utilitarian philosopher, historian, and economist. Born near Mont-



James Mill, British philosopher

rose, Forfarshire, April 6, 1773, after studying at Edinburgh he came to London, and embarked upon a literary career. His *History of India*, published 1817-18, led to appointments in the examiners' office of the E. India Company.

In philosophy, he is one of the chief representatives of associational psychology. In his *Analysis of the Phenomena of the Human Mind* he reduces all psychological reality to one fact—sensation, and all its laws to one—the law of inseparable association, the factors of which are liveliness of impression, repetition, and interest. In politics, Mill was regarded as the founder of philosophical radicalism. He died at Kensington, June 23, 1836. See *Life*, A. Bain, 1882.

**MILL, JOHN STUART** (1806-73). British philosopher and economist. The son of James Mill, he was born in London, May

20, 1806. His education, begun by his father, was completed in France. An extraordinarily precocious child, at 14 he had acquired a knowledge of a great variety of subjects, including classical literature, logic, in addition to political economy, history, and mathematics.

An acute mental crisis, induced by an exclusively intellectual education, was surmounted with the



J. S. Mill

help of a study of Wordsworth from 1820-58 he was employed in the East India Office, and retired on a pension when the company came to an end. From 1865-68 he was M.P. for Westminster, in 1866 Lord Rector of the university of St. Andrews. He died at Avignon, May 8, 1873. The influence of Mrs. John Taylor, whom he met in 1830 and married in 1851, greatly affected his views, and tended to modify and humanise his doctrinaire Benthamism.

From an early age Mill was engaged in literary work, writing books and contributing to reviews. His *System of Logic*, 1843, is an elaborate exposition of the theory and methods of induction. The basis of induction is not belief in the uniformity of the laws of nature, but the laws of causality, resting on the fact that we see a succession of phenomena always occurring in the same order. His metaphysical standpoint is set forth in his *Examination of Sir William Hamilton's Philosophy*, 1865. He is strongly opposed to all forms of intuition, while he admits the reality of the external world and of mind, as based upon the principles of association. Matter is a permanent possibility of sensation, and mind a series of feelings with a background of possibilities of feeling. In Ethics, he is an altruistic utilitarian. Happiness is the highest of all aims, not a selfish happiness, but a happiness identical with that of mankind in general. Happiness itself differs not only in quantity, but also in quality: there are higher and lower kinds of it, the former chiefly intellectual. Moral judgements and feelings are the result of association.

For many years Mill was an enthusiastic admirer of Comte's system of positive philosophy. When a young man he had founded a utilitarian society. His *Principles of Political Economy*, 1848, the object of which was to systematise and complete the theories of Adam Smith and Ricardo, is still considered indispensable for the study of the subject. He was the first to give a full description of the phenomena which determine current value, and also to see that exchange is not a primitive and necessary phenomenon, but only relative to a certain mode of appropriation. Hence value is not a natural and necessary quality of wealth. It is a relative term; there is no such thing as a general rise or a general fall of values. The temporary or market value of a thing depends on the demand and supply. The demand varies with the value, and the value always so adjusts itself

that the demand is equal to the supply. In politics, Mill, at least in his later years, belonged to the advanced radical party. His essay *On Liberty*, 1859, represents his mature political views. He was a warm defender of the rights of the working classes and an enthusiastic advocate of women's suffrage. See *Liberalism*; *Utilitarianism*.

**Bibliography.** Autobiography, 1908; *Lives*, A. Bain, 1882; W. L. Courtney, 1889; J. S. M., a Study of his Philosophy, C. Douglas, 1895; *The English Utilitarians*, L. Stephen, 1900.

**Millais, Sir John Everett** (1829-96). British painter. Born at Southampton, June 8, 1829, he



*J. E. Millais*

*Self-portrait, Uffizi Gallery, Florence*

came of a Jersey family, and was taken thither at an early age. Some drawings executed when he was seven were exhibited at the Academy in the winter of 1898. In 1833, on the recommendation of Sir M. A. Shee, he was sent to Sass's drawing school in Bloomsbury, and later to the R.A. schools. When ten he received a silver medal from the Society of Arts, and he took his first prize at the schools a year later. Shortly after 1848, with Holman Hunt and Rossetti, he started the Pre-Raphaelite Brotherhood.

Millais' first important picture, painted on the lines laid down by the P.R.B., was the *Banquet Scene from Keats' Isabella* and the *Pot of Basil*, exhibited in 1849, followed in 1850 by *Christ in the House of His Parents*, better known as *The Carpenter's Shop*. In 1921 a successful appeal was made to the nation to acquire the latter, then in the Tate Gallery, to prevent its being sold to the Melbourne Gallery, Victoria, Australia, the price being

10,000 guineas. Many similar pictures followed, notably *The Huguenot*, *The Proscribed Royalist*, *The Order of Release*, etc., but gradually Millais was escaping from the rigid lines laid down by his companions in the P.R.B. and developing definite characteristics of his own. Perhaps his two most important pictures executed under Pre-Raphaelite influence were *Autumn Leaves*, 1856, and *The Blind Girl*, one of his greatest works. Later he stayed with Ruskin in the N. of England and in Scotland. Sir Isumbras at the Ford, exhibited in 1857, marked a departure in style which evoked a protest from Ruskin. Its successors, *The Vale of Rest* and *Apple Blossoms*, clearly showed the emancipation of Millais from his early mannerisms.

In the sixties Millais was largely concerned with book illustration. From the time that he became an R.A. in 1863, there was a great demand for his portraits, considerable desire to obtain his landscapes, especially those painted in Scotland, and an ever increasingly enthusiastic public for his sentimental paintings, such as *The North-West Passage*, *The Princes in the Tower*, *The Yeoman of the Guard*, and *The Princess Elizabeth*. Among his finest portraits must be mentioned those of the Marquess of Hartington, Lord Tennyson, Cardinal Newman, Sir James Paget, Gladstone, Du Maurier, and Mrs. Jopling.

Millais in 1855 married the lady who had been Mrs. Ruskin, but who had obtained a decree of nullity of her first marriage. He was created a baronet in 1885, succeeded Lord Leighton, as P.R.A., Jan., 1896, and died of cancer of the throat Aug. 13, 1896. He was buried in St. Paul's Cathedral, and a statue by Brock was erected in the grounds of the Tate Gallery.

Millais was a buoyant, popular personality, strong, manly, and genial. It is by his Pre-Raphaelite pictures and his portraits that he will best be remembered. His pictorial work in black and white can hardly be paralleled. Its charm and dignity were remarkable. He cannot be regarded as an inspired painter, and in his landscapes showed himself unacquainted with the subtleties of atmospheric effect or momentary illumination. He was, however, a man of patience and quickness of vision, and he spared no toil to arrive at his own pictorial expression. See *Pre-Raphaelites*. *Prov.* Millay.

**Bibliography.** *Life and Letters*, J. G. Millais, 1899; *Lives*, J. E. Reid, 1909; Arthur Fish, 1923; *The Order of Release*, Sir W. James, 1948.

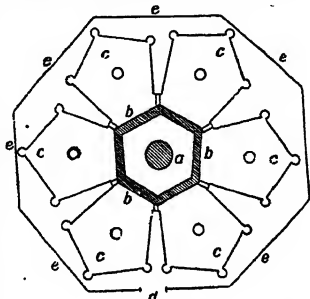
**Millar, GERTIE** (b. 1879). British actress. Born at Bradford, Yorks, Feb. 21, 1879, she first appeared on the stage in a Manchester pantomime, and toured the provinces in musical comedy. She made her London debut in *The Toreador*, at the Gaiety Theatre, 1901, playing there in musical comedies until 1907. Her successes included *A Waltz Dream*, 1908; *Our Miss Gibbs*, 1909; *A Quaker Girl*, 1910; *Gipsy Love*, 1912. She married (1) Lionel Monckton (q.v.); (2) 2nd earl of Dudley (d. 1931); and retired from the stage shortly after the First Great War.

**Millard, EVELYN** (b. 1869). British actress. Born at Kensington, Sept. 18, 1869, she studied at the R.C.M. and made her first appearance on the stage in *The Dancing Girl*, 1891. Having played leads with Alexander, Tree, and Waller, she went into management at the Garrick and other theatres during 1908-10. Plays in which she is remembered include *The Importance of Being Earnest*, *The Prisoner of Zenda*, *Monsieur Beaucaire*. One of her last appearances was as Calpurnia in *Julius Caesar* at the Shakespeare tercentenary performance, 1916.

**Millau.** Town of France, in the dept. of Aveyron. It lies on the right bank of the Tarn at the S.W. end of the Cévennes, 74 m. by rly. N. of Béziers. The church of Notre Dame is in a mixture of

1892, she was educated at Vassar College, and published a first volume, *Renaissance and other Poems*, in 1917. A lyric poet of distinction, who could strike the tragic note effectively, she won the Pulitzer prize for poetry in 1922. She published her collected sonnets in 1941, and her lyrics in 1943.

**Millbank.** District of S.W. London, now in the city of Westminster. The name applies strictly



**Millbank.** Plan of the old London penitentiary. *a.* chapel and governor's house. *b. c.* Bastions. *d.* Entrance. *e.* External walls

to the thoroughfare on the left bank of the Thames between Great College Street and Vauxhall Bridge Road. On the river bank, originally built to act as one side of the mill-race serving the mill of the abbot of Westminster, are the Victoria Tower Gardens. The chief buildings are the headquarters of the ecclesiastical commission and the crown agents for the colonies; Imperial Chemical House and Thames House; Millbank barracks; Tate Gallery; Millbank Hospital (h.q. of the R.A.M.C.).

What was first known as Millbank Penitentiary was the outcome of an Act of 1778, providing for penitentiary houses in accordance with certain ideas set afoot by Howard and other prison reformers. It was modelled by Smirke on the lines described in Bentham's *Panopticon*, or the *Inspection House*, 1778. Built in 1812-22, at a cost of more than £500,000, on ground bought in 1799 from the marquess of Salisbury, it resembled a wheel, the axle of which comprised the chapel and governor's house.

From this radiated six bastions, each with five sides and terminating externally in towers.

The external walls, forming an irregular octagon enclosed upwards of 16 acres, and were once surrounded by a moat. The buildings were of three storeys, were connected by covered ways with the chapel, and the dark passages, staircases and tortuous windings of the interior proved bewildering even to old warders. Every convict sentenced to transportation was first sent here and was solitarily confined. The system represented by the penitentiary was condemned in 1843, and the place, made a military prison in 1870, was closed Nov. 6, 1890, and pulled down in 1893. *Consult* Memorials of Millbank, A. G. F. Griffiths, 1875.

**Millboard.** Material made from waste paper, rags, rope, and similar scrap. These are pulped and hydraulically pressed into sheets varying from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch thick and up to 12 ft. by 6 ft. in size. Millboard is used for railway carriage panelling and partitions, and for book binding, etc.

**Millennium** (Lat. *millē*, a thousand; *annus*, a year). Period of 1,000 years. The term is used specifically of the ancient idea of a kingdom of Christ upon earth. Whereas many of the later Jews, basing the idea on a literal interpretation of O.T. prophecies, looked forward to the earthly millennium as the final goal, the Christian idea, based upon Rev. 20, was of a prelude to the blessedness of heaven.

Much discussion has taken place as to the meaning of the words of S. John, who foresaw Satan being bound and the martyrs dwelling with Christ for 1,000 years, at the end of which period Satan, loosed again, was to make his last assault upon the saints before being cast into the lake of fire. The doctrine of the millennium, also known as chiliasm (Gr. *chilioi*, a thousand), was condemned because of the excesses to which it gave rise; but it still exists in various forms and it formed part of the creed of several Evangelical divines. *See* Adventists; Anabaptists; Antichrist; Fifth Monarchy Men.

**Millepora.** Name given to a family of hydrocorallines which occur in the warmer seas. They form large chalky masses, covered with tiny pores through which the polyps protrude. These small pores are arranged in a circle around a larger central one, from which protrudes a polyp provided



**Millau, France.** General view of the town looking toward Causse Noir, a height of the Cévennes

Romanesque and Renaissance, and there is a notable square with arcades dating from the 12th-15th centuries. During the 16th and 17th centuries Millau was a Calvinist centre; its fortifications were destroyed by Richelieu in 1620. The chief industry is the manufacture of kid gloves. Population, 17,678.

**Millay, EDNA ST. VINCENT** (b. 1892). American poet. Born at Rockland Maine, Feb. 22,



with a mouth and specialised to act as the feeding member of the group. The smaller pores are occupied by polyps of longer body, whose function is to catch the prey and pass it to the mouth of the feeding polyp. Below the surface of the "coral" are numerous canals, which connect the different polyps into one compound organism. See Coral.

**Miller, ALICE DUER** (1874-1942). A New Yorker, educated at Barnard College, she married Henry Miller in 1899, and was a prominent figure socially. Her publications included *The Modern Obstacle*, 1903; *The Charm School*, 1919 (dramatised with Robert Milton, and produced at the Comedy Theatre, London); *The Beauty and the Bolshevik*, 1920; *Forsaking All Others*, 1930; *The Rising Star*, 1935. A set of nostalgic short poems, *The White Cliffs*, aroused sentiment in Great Britain and U.S.A., at the time of the threatened German invasion in 1940. A film version appeared in 1944. The author died Aug. 23, 1942, and a *Life* by her husband appeared in 1945.

**Miller, HUGH** (1802-56). Scottish geologist and writer. Born at Cromarty, Oct. 10, 1802, he was



Hugh Miller,  
Scottish geologist

apprenticed as a mason and quarryman. In 1834 he became accountant in a bank at Cromarty, and next year published *Scenes and Legends of the North of Scotland*.

In 1839 a letter published in Edinburgh on the Auchterarder case (see Free Church of Scotland) brought him into prominence with the Evangelical party in Scotland, who appointed him editor of the journal they established to advocate their policy. It was known as *The Witness*, the first issue appearing on Jan. 15, 1840, and it appeared bi-weekly. Miller was the editor, and later also its owner until his death. Temporarily insane through overwork, he shot himself, Dec. 23, 1856.

In addition to being one of the recognized leaders of the Free Church of Scotland, founded 1843, Miller was widely known as an advocate of education, franchise, and other reforms. But his reputation rests on his popular works on geology: *The Old Red Sandstone*, 1841, and *Footprints of the Creator*, 1847.

**Miller, JOAQUIN** (1841-1913). American poet, whose real name was Cincinnatus Heine Miller.



Joaquin Miller,  
American poet

He was born in Indiana, Nov. 10, 1841. He served as a volunteer in Walker's Nicaragua expedition, and in 1863 became a practising barrister, and in 1870 a county court judge in Oregon. Later he did a good deal of work as a journalist. He died Feb. 17, 1913. He is best known by his *Songs of the Sierras*, 1871, and by his melodrama of Mormonism, *The Danites*, 1880. Consult *Life*, M. S. Peterson, 1937.

**Miller, JOE** (1684-1738). An English comedian. An entirely illiterate man, who is said to

have married because he wanted someone at hand to read his parts to him, he made his first appearance at Drury Lane, Nov. 28, 1709, as Teague in Sir Robert Howard's comedy *The Committee*, and subsequently won success as a low comedian in many comedies by Steele, Congreve, Farquhar, and Vanbrugh. He died Aug. 16, 1738. The year after his death, John Mottley, the dramatist, brought out a collection of jocular anecdotes, *Joe Miller's Jests*; or *The Wit's Vade Mecum*, which he unwarrantably fathered upon him.



Joe Miller,  
English comedian

**Miller, PHILIP** (1691-1771). A British botanist. He was born near Greenwich, and in 1722 was appointed curator of the physic garden at Chelsea, holding his post until 1739. He died at Chelsea, Dec. 18, 1771. Miller's great work, *The Gardener's Dictionary*, first appeared in 1724.

**Miller, WILLIAM** (1796-1882). Scottish engraver. He was born at Edinburgh, May 28, 1796. He is best remembered for his engravings after Turner, which Ruskin valued highly. He also engraved Turner's work in the *England and Wales* series, and illustrated in engraving Rogers's poems and Scott's works. He died at Millerfield, Jan. 20, 1882.

**Millerand, ALEXANDRE** (1859-1943). A French president. A barrister, born in Paris on Feb. 10,

1859, he was elected deputy for Paris in 1885 as a Radical-Socialist, and in 1887 was made a member of the budget committee. He gave special attention to social questions, fiscal reform, and the championing of workmen's syndicates. He became leader of the Socialists, but his acceptance of office as minister of Commerce in Waldeck-Rousseau's government of 1899 led to his expulsion from the party in 1904. In 1909 Briand

made him minister of public works, and in 1912 he became, for a year, Poincaré's minister of War. He was recalled on the outbreak of the First Great War, but in 1915 he again resigned, and remained out of office until appointed commissioner-general for Alsace-Lorraine in 1918. He succeeded Clemenceau as premier, Jan., 1920, becoming also foreign secretary. When President Deschanel resigned the following September, Millerand was elected in his place: but in May, 1924, Herriot, whose *Cartel des Gauches* had secured a majority at the elections in May, refused to form a government under his presidency. Millerand formed an alternative cabinet, but the chamber refused to recognize it: he thereupon resigned the presidency and virtually forsook public life. He died April 6, 1943.



Alex. Millerand,  
French statesman  
Henri Manuel

**Miller Effect.** Term in electronics. It refers to the energy fed back from the anode to the grid circuit of a thermionic valve, through the internal capacitance between these electrodes.

**Miller Indices.** Term referring to the method of defining a set of parallel planes in a crystal which are being used in reflecting incident X-rays.

**Millerite** or **NICKEL PYRITES**, or **CAPILLARY PYRITES**. Mineral consisting of nickel sulphide (NiS) with traces of cobalt, copper, and iron. It crystallises in the hexagonal system, but usually occurs as fine hair-like crystals with a brassy-yellow metallic appearance. It forms nodules in clay-ironstone and in veins with other nickel and cobalt minerals as in Cornwall, Saxony, and Ontario.

**Miller's Thumb.** Popular name for the small freshwater fish, *Cottus gobio*. It is better known under the name bullhead (*q.v.*).



**Millet.** A general term for a number of botanically diverse grasses grown for both grain and forage and constituting important sources of human food in China, India, S. Russia, the Balkans, and Africa. Foxtail millet or Italian millet (*Setaria italica*), broom corn or proso millet (*Panicum miliaceum*), barnyard or Japanese millet (*Echinochloa frumentacea*), pearl millet (*Pennisetum glaucum*) and finger millet (*Eleusine coracana*) are all grown extensively. Like the sorghums, the millets are Old World plants, but were introduced into the U.S.A., where their popularity as forage plants has, however, declined since the introduction of Sudan grass. Considerable heat is necessary for the growth of millets, which are very susceptible to damage by frost. See Sorghum.

**Millet, JEAN FRANÇOIS** (1814-75). A French painter. Born at Gruchy, near Cherbourg, Oct. 4, 1814, the son of peasants, he received early instruction from Mouchel and Langlois. He went to Paris with a scholarship, 1836, and entered Delaroche's studio, where Diaz and Rousseau were also students. He began by painting nudes and imitations of Watteau, e.g. *L'Amour Vainqueur*. For a time he painted signs at Cherbourg, returning to Paris in 1842. Milk Woman was accepted by the Salon in 1844, but *Oedipus Unbound* provoked hostility. By 1849 Millet had sufficient independence to settle at Barbizon and paint pictures of peasant life, for the naturalistic, dignified, and sympathetic treatment of which he has few equals. Some of his pictures have become, through reproduction,



J.F. Millet  
Self-portrait in crayon, 1846-47

world-famous. The Sowers was exhibited in 1851; *The Gleaners*, 1857; *The Angelus*, and *Death and the Woodcutter*, 1859; *The Man with the Hoe*, 1863. He was commissioned in 1873 to decorate the Pantheon with the Four Seasons, but only charcoal studies were produced. He died Jan. 20, 1875. See *Angelus*; consult *Lives*, A. Sensier, Eng. trans. H. de Kay, 1881; J. C. Ady, 1910; P. Gsell, 1928. *Pron.* Meelay.

**MILL HILL.** Dist. of the Middlesex bor. of Hendon. Mainly residential, it lies about 8 m. N.W. of London, and is served by rly., an arterial road, and London Transport. The old village, at an elevation of 400 ft., commands delightful views. Here are Mill Hill school (v.i.); the London univ. observatory (see illus. p. 6168); the National Institute for Medical Research, opened 1950; the parish church of S. Paul 1829-36; S.

Joseph's missionary college of the Sacred Heart; two convents; the Linen and Woollen Drapers' cottage homes; and the barracks, h.q. of the Middlesex Regiment. S. Vincent's convent was once known as Littleberries House, said to have been built by Charles II. and to have had Nell Gwynn as occupant. On the site of Mill Hill school were the gardens of Peter Collinson (1694-1768), naturalist and antiquary. Wm. Wilberforce lived at Highwood. Pop. 17,146.

**Mill Hill School.** English public school. Founded in 1807 as a school for the sons of non-conformists, its constitution was remodelled in 1869. It has a fine range of buildings, standing in grounds of 70 acres, at Mill Hill, Middlesex, accommodation being provided for about 400 boys. The school is divided into upper, middle, and lower, and there are classical and modern sides. Although mainly supported by nonconformists, it has no sectarian tests. There are scholarships to the universities and to the school itself. A gate of honour commemorates 200 old boys killed in the First Great War.

**Millibar.** Thousandth part of a bar, the meteorological unit of atmospheric pressure on the C.G.S. system. The older practice of speaking of atmospheric pressure as equal to so many inches, or millimetres, is open to objection, for these are units of length, not of pressure. A bar (a million dynes to the sq. cm.) is equal to the pressure of a column of mercury 750.1 millimetres, or 29.53 inches, high at 0° C. in lat. 45°. The millibar has been used by the British meteorological office since May, 1914. See *Meteorology*.

**Millième.** An Egyptian copper coin. It is the tenth part of a piastre, or the one-thousandth of an Egyptian pound. The  $\frac{1}{2}$  piastre is called 5 millièmes. See *Piastre*.

**Millikan, ROBERT ANDREWS** (b. 1868). American physicist. Born at Morrison, Illinois, March 22, 1868, he was educated at Columbia and German universities and became assistant in physics at Chicago in 1896. By 1910 he was professor, and in 1921 chairman of the executive of the California Institute of Technology and director of its Norman Bridge laboratory. There, as at Chicago, his studies and writings placed him in the front rank of living physicists, his work on electrons being recognized by the Nobel prize, 1923. Millikan established the common identity of electrons, measured the charge of an electron by means



Jean François Millet. *The Wood Sawyers*, a notable example of his work  
By courtesy of the Victoria and Albert Museum

of the oil-drop experiment (*q.v.*), and did valuable work on photoelectric effects. Among his books are *Science and Life*, 1923; *Evolution in Science and Religion*, 1927; *Time, Matter, and Values*, 1932; *Cosmic Rays*, 1939; *Electrons, Protons, Photons, Neutrons, and Cosmic Rays*, rev. ed. 1946.

**Millin**, SARAH GERTRUDE. Contemporary South African writer, native of Cape Province. She published her first novel, *The Dark River*, in 1920, and a series of dramatic studies mostly against an African background: *Mary Glenn*, 1925; *An Artist in the Family*, 1927; *The Coming of the Lord*, 1928; *Three Men Die*, 1934; *What Hath a Man?*, 1938. She published a war diary in 3 vols., 1944-46, and a series of plays based on the life of Gen. Smuts. *The Night is Long*, 1941, was autobiographical.

**Milling**. Method of machining to obtain a desired size or shape on the surface of a work-piece by removing layers of material with a rotating multi-toothed cutter. Usually the work-piece is mounted on the machine table and moved past the cutter. The latter is known as a mill and in its simplest form is made from a cylinder of cutting steel by machining and grinding a series of cutting edges or teeth longitudinally on its circumference. These teeth may be straight or helical, and may extend radially down the end faces of the cylinder so that they will cut at the sides as well as the circumference. Usually the cut is wide and deep, although the actual cuttings are relatively thin. There are two methods of milling: (a) up-cut, in which the mill teeth tend to push the work-piece away as they rotate, and (b) down-cut, in which the teeth tend to draw the work-piece closer in as they rotate.

Milling is the name given to serrations stamped on the edges of more valuable coins, preventing the fraud which can be perpetrated by skimming metal from the edges of unmillied coins whilst leaving them apparently untouched. For milling, *i.e.* grinding grain, see *Flour Mill*.

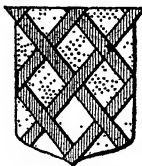
**Millipede**. Group of arthropods, which, with the centipedes, form the zoological class Myriapoda (many-footed). They have long, rounded and segmented bodies, with a hard chitinous covering, and usually two pairs of legs on each segment. Their legs are certainly numerous, but do not justify the name "thousand-footed." They differ from the centipedes in being vegetarian, and they lack the poison



Millport, Buteshire. View of the town and southern shore of Great Cumbrae Island

claws. Great Britain has several species, which may be found lurking under stones in the daytime and rolling themselves into a coil when disturbed. They can do harm to crops especially if they become numerous, when they are best checked by dressings of lime and soot. See *Myriapoda*.

**Millom**. Town and rural dist. of Cumberland, England. Millom stands on the W. side of the



Millom arms

estuary of the Duddon, 9 m. from Barrow-in-Furness, with a rly. station. The chief building is the church of Holy Trinity, partly Norman, with some very interesting features. Millom grew up around a castle built here about 1100; this was long the residence of the Huddlestons family, and in the Middle Ages its lords had the power of sentencing their dependents to death. It was besieged during the Civil War, and is now a ruin. Millom owes its modern growth to the development of the Furness coal and iron field. Iron ore is mined here, and there are large furnaces and ironworks. Pop. 7,500.

**Mill on the Floss**, THE. Novel by George Eliot (*q.v.*), published in 1860. Her third work of fiction and second long novel, it is a companion work to the earlier *Adam Bede*, as a close and detailed picture of English provincial life. Its prime interest is as a study of a brother and sister, preserving some of the most charming recollections of childhood to be found in English literature, and, further, it contains a series of masterly portraits of the other members of the Tulliver family.

**Millport**. Police burgh and watering-place of Buteshire, Scotland. It stands on the S. side of the island of Great Cumbrae, in the



Millport arms

Firth of Clyde, 24 miles from Greenock. The chief building is the episcopal cathedral. Here is a marine biological station, and for visitors there are golf links, boating, and bathing. Millport has a regular steamboat service with the ports on the Clyde. The opening of the sea on which it stands is called Millport Bay. Pop. 2,083.

**Mills**, BERTRAM WAGSTAFF (1873-1938). British showman. The son of a coach-builder, Mills was born in London, Aug. 11, 1873, and acquired a familiarity with horses when he entered his father's business at the age of 15. During the First Great War he served as a captain in the R.A.S.C., and in 1921 founded the circus which bore his name. For the first eight years he limited himself to an annual production at Olympia, which ran for five weeks during the Christmas season; but in 1929 he started the Bertram Mills tented show, which toured Great Britain from April to Oct. each year. The equipment



Bertram Mills, British showman

and animals filled four special trains and 75 lorries. The Olympia show employed 4,000 people, and the cost of production was from £15,000 to £20,000 weekly.

Bertram Mills was a member of the L.C.C. from 1928 to 1938. He was at one time a well-known breeder and judge of hackney harness horses, and used always to enter his "Old Times" stage-coach for the coaching marathon from Hyde Park to the Richmond horse show. He died April 16, 1938, and the Bertram Mills circus passed to his two sons.

**Mills**, JOHN (b. 1908). British actor, born Feb. 22, 1908, in Suffolk. He started in the chorus at the London Hippodrome, 1929, and long appeared in revues and musical comedies, though his Cockney soldier in *Red Night*,

1936, showed his acting abilities. In *Men in Shadow*, 1942, and *Duet for Two Hands*, 1945, he had stronger parts in plays written by his wife, Mary Hayley Bell. In films from 1932, Mills achieved celebrity in *Tudor Rose*, *In Which We Serve*, *The Way to the Stars*, etc.; and from 1945 he was playing leads in *Waterloo Road*, *Great Expectations*, *Scott of the Antarctic*, *Mr. Polly*, *Rocking Horse Winner*, *Morning Departure*, etc.



John Mills,  
British actor

**Mills Grenade.** Standard hand grenade of the British army. *See Grenade.*

**Mill Springs, BATTLE OF.** Federal victory in the American Civil War, Jan. 18, 1862. The Confederate lines defending the South from invasion by the Federals were, at Mill Springs, a village some 10 m. W. of Somerset, Kentucky, held by General J. B. Crittenden. With the opening of the 1862 campaign Gen. George H. Thomas advanced towards this place with a force of 4,000 men. Crittenden hastened to meet him, and launched an attack which developed into a fierce fight. The Confederate forces, despite their valour, were driven back and routed with heavy loss. It is sometimes called the battle of Fishing Creek. A national cemetery was afterwards set up here, over 700 bodies being interred therein. *See American Civil War.*

**Millstone.** Wheel or circular mass of rock used for grinding grain. The best rocks for the purpose are the burr stones of France, being hard and porous. They are found in the Tertiary of the Paris basin, and large millstones are usually built up. The German

millstones are a basaltic lava found near Cologne. Sandstones and grits are used for millstones, the characteristics of which should be open or cellular structure, toughness and hardness, as the coarse granular sandstone found in New York and other parts of the U.S.A. Millstones are being gradually superseded by steel rollers in the manufacture of flour. *See Milling.*

**Millstone Grit.** Name given to a group of coarse sandstones and fine siliceous conglomerates occurring above the carboniferous limestone and below the coal measures of N. England. Sandstones of similar age but separated from the N. England deposits are also known by the same name. English Millstone Grit was laid down as a great delta extending from the Solway Firth S. to Liverpool and thence curving E. across England through Lincolnshire to the North Sea. The river responsible flowed S. and had tributaries draining from the Scottish Highlands and Scandinavia. The rock is used for building purposes and to make grindstones.

**Millwall.** District of London. It is in the Isle of Dogs, forms the S.W. part of the met. bor. of Poplar, and has Limehouse Reach on the W., Cubitt Town E., the West India Docks N., and Millwall Docks S. The last named have an area of 234 acres, 35½ acres of which are covered with water. The entrance lock in Limehouse Reach is 450 ft. long, 80 ft. wide, and 28 ft. deep at high-water spring tides. Opened 1864, Millwall Docks were linked with West India Docks in 1929 as part of the Port of London Authority scheme, and thereby linked with Blackwall Reach. There are large silos, granaries, and warehouses for storing sugar. Trade is done principally with the Baltic and N. Europe and the Americas. Much damage was done by German bombs in 1940. The name Millwall is derived from seven windmills, which stood on the wall built here to keep the Thames from overflowing at high tide.

**Milman, HENRY HART** (1791-1868). British historian. He was born in London, Nov. 10, 1791, and educated at Eton and at Brasenose, Oxford. He won the Newdigate prize, became fellow of Brasenose, and was ordained in 1816. During 1821-30 he was professor of poetry at Oxford. In 1835 he

was appointed canon of Westminster and rector of S. Margaret's, and in 1849 he became dean of S. Paul's, a position which he held until his death near Ascot, Sept. 24, 1868.



H. H. Milman,  
British historian

His *History of the Jews*, 1829, gave offence by his treatment of Jewish history from the secular point of view. He wrote *History of Christianity under the Empire*, 1840, but his great work was *History of Latin Christianity*, 1854-56. He edited what was long accepted as the standard edition of Gibbon's *Decline and Fall of the Roman Empire*, and also wrote a *Life of Gibbon*, 1839.

**Milne, GEORGE FRANCIS MILNE**, 1st BARON (1866-1948). British soldier. He was born Nov. 5, 1866, entered the Royal Artillery in 1885, and after serving in the Sudan in 1898, fought in the S. African War. During the First Great War he commanded the British contingent in Salonica in 1916, was responsible for defensive operations against the Bulgarians, and in 1918 for the offensive which ended in their capitulation. After commanding the army of the Black Sea, he retired in 1920. He became lieut.-gen. in 1917, was knighted in 1918, and was promoted field marshal in 1928. From 1926 he was chief of the imperial general staff, until in 1933 he was raised to the peerage and made governor of the Tower of London, resigning in 1938. From 1929 to 1946 he held the highly honoured position of master gunner, S. James's Park. He died March 23, 1948.

**Milne, ALAN ALEXANDER** (b. 1882). British author and playwright. Born Jan. 18, 1882, he was educated at Westminster and Trinity College, Cambridge, and began his career as journalist in London in 1903. Assistant editor of *Punch*, 1906-14, he collected his contributions into such light-hearted volumes as *The Day's End*, 1910; *Once a Week*, 1914; and *If I May*, 1920. The appearance in 1924 of *When We Were Very Young*, a book of children's verses, of which the central figure, Christopher Robin, was his son, set Milne among the most popular writers of his day. This was followed by *Winnie-the-Pooh*, 1926; *Now We Are Six*, 1927; *The House at Pooh Corner*, 1928. Later



Millstone as used in the Middle East for grinding corn by hand. This form is of great antiquity

publications included *Four Days' Wonder*, 1933, and his autobiography, *It's Too Late Now*, 1939.



A. A. Milne,  
British writer

Milne's rather sentimental comedies did well in the theatre, particularly *Mr. Pim Passes By*, 1919; *The Romantic Age*, 1920; *The Dover Road*, 1922; *The*

*Fourth Wall* (a crime play), 1928; *Michael and Mary*, 1929; *Other People's Lives*, 1932. *Toad of Toad Hall* was an adaptation of K. Grahame's *The Wind in the Willows*, and *Miss Elizabeth Bennet of Jane Austen's Pride and Prejudice*.

**Milne, SR** (ARCHIBALD) **BERKELEY** (1855-1938). British sailor. Born June 2, 1855, son of Admiral of the Fleet Sir Alexander Milne, Bt., he was educated at Wellington and entered the Royal Navy in 1869. After service in the Transkei, Zulu, and Egyptian wars, he was appointed to the royal yacht *Osborne*. Second-in-command, *Atlantic Fleet*, 1905-06; commander of the 2nd division, *Home Fleet*, 1908-10, he commanded in the Mediterranean from 1912 to the outbreak of the First Great War. He was criticised for allowing the escape of the German cruisers *Breslau* and *Goeben* into Turkish waters, but the Admiralty exonerated him, and he was given the *Nore* command. In 1921 Milne published *The Flight of the Goeben and Breslau*. He was promoted admiral in 1911, retired 1919, and died July 5, 1938, leaving no heir to the baronetcy.

**Milne, EDWARD ARTHUR** (b. 1896). British scientist. He was born at Hull, Feb. 14, 1896, and educated there and at Trinity, Cambridge. He was lecturer in astrophysics at Cambridge, 1922-25; Beyer professor of applied mathematics at Manchester, 1924-28; Rouse Ball professor of mathematics at Wadham College, Oxford, from 1928. Milne served on the ordnance board at the ministry of Supply, 1939-44, and was president of the Royal Astronomical Society, 1943-45. Elected F.R.S. in 1926, he was awarded the society's royal medal in 1941. He published *Analysis of Stellar Structure*, 1930; *Relativity, Gravitation, and World Structure*, 1935; *Rational Electrodynamics*, 1933. Milne evolved a new cosmology based on a finite time scale of his own devising.

**Milne, JOHN** (1850-1913). British seismologist. Born at Liverpool and educated at the Royal School of Mines, he worked for some years as a mining engineer. Appointed 1875 professor of geology and mining in the Imperial Engineering College at Tokyo, a post he held for twenty years, he established the seismic survey of Japan. Milne was one of the pioneers of the systematic study of earthquakes, and as secretary of the seismological committee of the British Association was chiefly responsible for setting up seismological stations all over the world. He invented various forms of seismographs, and wrote two standard works, *Earthquakes and other Earth Movements*, 1883; *Seismology*, 1898. He died July 31, 1913.

**Milner, ALFRED MILNER, 1ST VISCOUNT** (1854-1925). British administrator and statesman. Born



*Milner*

Russell

of English parents at Bonn, March 23, 1854, he was educated in Germany, at King's College, London, and Balliol College, Oxford, where he had an exceptionally brilliant career, ending with a fellowship at New College. He became a barrister and journalist.

His public career really began with the post of private secretary to G. J. Goschen. This led to his appointment as under-secretary for finance in Egypt, 1889-92, and chairman of the board of inland revenue, 1892-97. He was created K.C.B. in 1895, and in 1897 was sent as governor of the Cape, conducting negotiations with Kruger before the South African War. He remained at his post during the struggle, took part in the peace negotiations, and afterwards was governor of the Transvaal and Orange River colonies until 1905.

Conscious possibly of the hostility his imperialism had aroused among Liberals, Milner, who had been made a baron in 1901 and a viscount in 1902, remained in retirement for some years, although he emerged to denounce the budget of 1909. In 1916 his former opponent, Lloyd George, chose him as one of the small war cabinet, and the two worked together closely in planning the final victory of the Allies. After the armistice Milner was appointed secretary for War

He was colonial secretary, 1919-21, when he headed a mission to Egypt. He died May 13, 1925. Although possessed of high administrative gifts, a certain reserve, sometimes called hardness, prevented Milner from ever becoming a popular figure. He was accused of being a bureaucrat, and opposed to progress of all kinds. His writings include *England in Egypt*, 1892; *Credo*, 1925. The *Milner Papers*, 1897-1905, were edited by C. Headlam, 1931-33. See *Egypt*; *South Africa*.

**Milngavie**, Town of Dumbar-tonshire, Scotland. It stands on Allander Water, 6 m. N.N.W. of Glasgow by rly. The industries include paper making. Pop. est. 6,900. *Pron.* Mulg-eye.

**Milnrow**. Urban dist. of Lancashire, England. It is 2 m. by rly. S.E. of Rochdale. John Collier, known as Tim Bobbin, the dialect poet, was a schoolmaster here. Pop. 8,134.

**Milo or Melos**. Island of Greece, the most south-westerly of the Cyclades (*q.v.*). It is 14 m. in length by 8 m. wide, having an area of 60 sq. m. Of volcanic origin, it rises in Mt. St. Elias to 2,540 ft. A long inlet opening on the N.W. affords one of the best natural harbours in the Levant. The soil is fertile, yielding cereals; sulphur, gypsum, etc., are found. Plaka, the capital, stands on the N.E. shore of the inlet. Port Milo is situated near the site of ancient Melos. Here were found the statue of Poseidon, now in the Athens Museum, the Asclepius, in the British Museum, the *Venus de Milo*, in the Louvre, Paris, and other works of ancient art. In the prehistoric settlements at Phylakopi, much early pottery and some paintings were excavated. Milo was colonised successively by the Phoenicians and Dorians, and fell to the Athenians in 416 B.C. The Turks took possession of the island in 1537. Pop. 5,000. *Pron.* Meelo.

**Milo**. Famous athlete of ancient times, belonging to Crotona, S. Italy. He gained many victories at the Olympic and other games, and is said on one occasion to have carried a heifer on his shoulders through the stadium at Olympia, and eaten it in one day. In 511 B.C. he was general of the army which defeated the Sybarites. It is said that in his old age, while endeavouring to rend a split



Milngavie arms

trunk, his hand was trapped, and, being unable to get away, he fell a victim to wolves. *Pron.* Mylo.

**Milo**, TITUS ANNIUS (d. 48 B.C.). Roman politician. A member of the aristocratic party, he was largely responsible, as tribune of the plebs, for securing the return of Cicero from exile, 57 B.C. This brought him into conflict with Clodius. Both were in the habit of going about Rome attended by bands of armed gladiators, and the two bands meeting on one occasion on the Appian Way, Clodius was killed, 52 B.C. Arraigned for the murder, Milo was defended by Cicero, but a tumult arose, Cicero was intimidated and did not deliver his speech, and Milo was condemned and went into exile. Milo afterwards led a band of insurgents in S. Italy and was slain near Thurii.

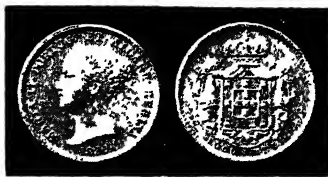
**Milosh Obrenovitch** (1780-1860). Prince of Serbia. Of peasant birth, he was employed in the



Milosh Obrenovitch,  
Serbian prince

cattle trade by his half-brother, Milan Obrenovitch, who was already known as a patriot. Milosh, whose real name was Theodorovitch, took his brother's surname, became voivode in 1807, and distinguished himself in the rising against the Turks headed by Karageorge (*q.v.*). In 1813 the Turkish campaign to re-establish order drove the latter to take refuge in Austria, but Milosh remained in Serbia, made his peace, and was appointed voivode of Rudnik. In 1815 he raised his standard against the Turks, drove or bought them out of the country, and two years later was elected prince of Serbia, under the suzerainty of Turkey. The next twenty years were spent in developing and establishing order in the country. But in 1839 Russia, who had viewed with disapproval Milosh's independent spirit and friendliness with Great Britain, fomented an agitation which forced him to abdicate, and he lived in retirement until 1858, when, on the expulsion of Alexander Karageorge, he was again given the throne. He died Sept. 24, 1860. See Belgrade.

**Milreis** or **MILREAS** (Port. *milreis*, a thousand reis). Obsolete Portuguese gold coin nominally worth 4s. 5d. It has been superseded by the escudo (*q.v.*). The



Milreis. Obverse and reverse of obsolete Portuguese gold coin;  $\frac{1}{2}$  actual size

Brazilian milreis was a gold coin, replaced in 1942 by the cruzeiro (in 1946, 18-96 cruzeiros to the \$).

**Miltiades**. Athenian soldier (d. c. 488 B.C.). He succeeded his brother Stesagoras as tyrant of the Thracian Chersonese. When Darius I of Persia made his expedition into Scythia, and his return was overdue, Miltiades and other Greeks, who had been left behind to guard the bridge over the Danube, recommended that the bridge should be destroyed, but their counsel was overruled. The truth of this story, related in Herodotus, has been called in question. Miltiades subsequently incurred the hostility of Darius by his conquest of Lemnos and Imbros, which were subject to Persia, and when Darius determined upon war with Greece, Miltiades sought refuge in Athens.

He was chosen one of the ten generals, and when, before the battle of Marathon, opinions were divided as to the advisability of immediate attack, the bold policy of Miltiades carried the day. Under his charge the Greeks gained their memorable victory, 490 B.C. (See Marathon.) Entrusted subsequently with a force of 70 ships to carry on the war against the Persians, Miltiades attacked the island of Paros but failed, and was wounded. Indicted for deceiving the people, he was condemned to pay a fine of 50 talents (about £12,000), and, being unable to pay, was thrown into prison, where he died. He was the father of Cimon (*q.v.*). *Pron.* Mil-ty-adeez.

**Milton**. Town of Massachusetts, U.S.A., in Norfolk co. On the Neponset river, 7 m. S. of Boston, it is served by the New York, New Haven and Hartford rly. A residential suburb of Boston, it includes the villages of Lower Mills, Mattapan, and East Milton, in the Blue Hills, on whose summit 635 ft., is an observatory. Voss House, built in 1773 is preserved.

Musical instruments, artificial limbs, drugs, and chocolate are manufactured. Settled in 1636, it was incorporated as a separate township in 1662. Pop. 18,708.

**Milton**, JOHN (1608-74). English poet and writer. He was born in Bread Street, London, Dec. 9, 1608. His father, a scrivener, was Puritan in sympathy, but a lover of literature and music, and the child enjoyed all the advantages of a cultivated home. Educated at S. Paul's and Christ's College, Cambridge, on leaving the university he retired to his father's country house at Horton, Bucks. There he spent 1632-38 in arduous study, and wrote among other things the exquisite companion idylls, *L'Allegro* and *Il Penseroso*, 1633; the masque *Comus*, 1634; and *Lycidas*, 1637, an elegy on the death of his college friend, Edward King, which apart from its beauty is important because in it he first openly proclaimed adherence to the Puritan cause.

In May, 1638, he set out for the Continent, intending to spend at least three years abroad. But at Naples news reached him of civil commotion at home, and thinking it "base to be travelling for amusement" while his "fellow-citizens were fighting for liberty," he abandoned his projected tour in Greece and returned to England, Aug., 1639, to find the country on the verge of civil war. He was already meditating a great epic poem, but, laying this aside, devoted himself for 20 years almost entirely to politics and prose. His *Doctrine and Discipline of Divorce* appeared in 1643-45; *Tractate on Education* in 1644, the same year as his splendid vindication of the liberty of the press, *Areopagitica*. Immediately after the execution of Charles I he published *Tenure of Kings and Magistrates*, which established his position as the most eloquent apologist of the new regime, and he was appointed Latin secretary to the committee for foreign affairs. He continued to render assistance to the government by his *Eikonoklastes*, 1649; *Defensio pro Populo Anglicano*, 1651; and *Defensio Secunda*, 1654.

In 1652 his eyes, always weak, failed entirely and he became totally blind. Meanwhile his domestic life had been unfortunate. In 1643 he had married Mary Powell, daughter of an Oxfordshire royalist, but the union was unhappy. His wife died in 1653, and in 1656 he married Catherine Woodcock (d. 1658). Then the disaster of the Restoration drove him into



Miltiades,  
Athenian soldier



obscurity and left him an impoverished man. In his loneliness and sorrow he now turned to the poetic work which he had planned so many years before. *Paradise Lost*, "the epic of a lost cause," was published in 1667; *Paradise Regained* and *Samson Agonistes* in 1671. The principal prose works of these last years were a *History of Britain*, 1670; and a treatise *Of True Religion*, 1673. In 1663 he took as his third wife Elizabeth Minshull, whose affectionate care was some compensation for the undutiful conduct of the three daughters of his first marriage. Milton died in his house in Artillery Walk, Bunhill Fields, London, Nov. 8, 1674, and was buried in S. Giles's, Cripplegate. His widow survived him until 1727.

Milton has been described as "not only the highest, but the completest type of Puritanism," but while this may be true in respect of his personal character, as a poet he far transcended the limitations of his sect, for with the Puritan's zeal for righteousness he combined the scholar's love of knowledge and the artist's devotion to beauty. He was indeed a child of the Renaissance; his genius was inspired and enriched by its classic culture; and in form



*Joannes Miltonis* (John Milton)

After W. Easthorpe

But while Milton's art and learning connect him with the Renaissance they are turned by him to the service of a Puritan philosophy of life; as notably in *Paradise Lost*, which, technically the finest example of the classic epic in modern European literature, has as its avowed purpose "to justify the ways of God to men." His supremacy among

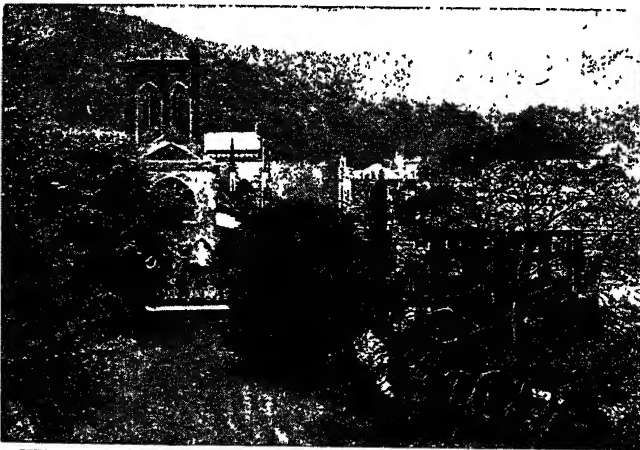
**Bibliography.** *Poetical Works*, ed., D. Masson, new ed., 1890; *Lives and Studies* by D. Masson, 1859-80; M. Pattison, 1879; S. A. Brooke, 1879; R. Garnett, 1890; W. Raleigh, 1894; E. M. W. Tillyard, 1930; H. Belloc, 1935; M., Man and Thinker, D. Saurat, new ed. 1944; M. and the English Mind, F. E. Hutchinson, 1947.

**Milton Abbey.** A mansion and church in Dorset, England. About 7 m. S.W. of Blandford, it occupies the site of a 10th century Benedictine abbey and of the ancient town of Milton or Middleton. In 1752 the property was bought by Joseph Damer, later earl of Dorchester, who destroyed the town, transferring the inhabitants to the present Milton Abbas, pulled down the monastic buildings, except the abbey church and the monks' refectory, a large hall with a roof of Irish oak, and built the existing mansion in 1771 on the site of the abbey, from designs by Sir W. Chambers. The old town had a grammar school, at which Masterman Hardy, Nelson's captain, was a scholar.

The abbey church is a superb 12th-14th century structure, with Perpendicular tower, flying buttresses, and many beautiful windows. It has a 15th century altar screen, an oak tabernacle, and some ancient paintings and fine sculptures. Milton Abbey is the Middleton Abbey of Thomas Hardy's *The Woodlanders*. On an eminence near by is the little Norman chapel of S. Catherine, now restored as a place of worship.

**Milvian Bridge, BATTLE OF THE.** Fought Oct. 27, A.D. 312, at the bridge of that name, sometimes called the Mulvian Bridge, across the Tiber, between the forces of Constantine and those of Maxentius. Some time before the battle Constantine, it is said, had a vision, in which he saw in the sky the cross of Christianity, with the inscription: By this conquer. There is no reliable evidence as to the date when Constantine resolved to adopt a liberal policy towards Christianity, but it is certain that in the battle his soldiery fought with the Christian monogram as their badge. The battle resulted in the complete defeat of Maxentius, who himself was drowned in the Tiber. Constantine thus became master of the Western empire, and was able to promulgate in his dominions the policy of toleration towards Christianity.

**Milwaukee.** City and port of entry of Wisconsin, U.S.A., the co. seat of Milwaukee co. The largest city of the state, it stands on the W. shore of Lake Michigan, 85 m. N. of Chicago, and is served by the Chicago and North-Western and



Milton Abbey, Dorsetshire. The abbey church, restored in 1865, and the mansion erected on the site of the old monastic buildings

By courtesy of Country Life

his work belongs to the great Renaissance tradition; for Comus is a masque of the kind which Italian influences had made popular in the aristocratic circles of the time; *Lyidas*, a pastoral elegy in the manner of Theocritus and Bion; *Paradise Lost*, an epic fashioned closely on the models of Greek and Latin antiquity; *Samson Agonistes*, a tragedy of the severe Attic type.

English poets is beyond dispute; in intellect, imagination, and creative and constructive power he is without a rival; he is our greatest master of sublimity and the "grand style"; and if his Puritanism often makes him harsh and narrow, in loftiness of moral spirit he is still unsurpassed. See Chalfont St. Giles; English Language and Literature; *Paradise Lost*.

W. H. Hudson



other rlys. The river Milwaukee and its tributaries, the Menominee and Kinnickinnie, which intersect the city, are navigable by large cargo and passenger ships, while an additional means of transport is afforded by the Great Lakes. The harbour is protected by breakwaters, its wharves extend for more than 20 m., and there is ample warehouse accommodation. Milwaukee ranks twelfth in population among U.S. cities and ninth in value of manufactured goods. Leading manufactures are metal goods, canned meat, and beer. In 1937, the city was debarred from further competition in health statistics among American cities, having received national awards regularly for 20 years. Early settlers were German emigrants from the 1848 European revolutions. A socialist mayor served continuously, 1916-40. Victor Berger, first socialist congressman, was sent to Washington in 1910, sentenced to prison under the espionage act during the First Great War, but regained his seat in 1922. Both Roman Catholic and Communist minorities have been active; these held the balance of power in 1946 in Milwaukee and combined to expel Robert La Follette, a famous liberal, from the U.S. senate by a vote of 9,000. Milwaukee, originally an Indian town, was visited c. 1760 by Alexander Henry. In 1838 it was incorporated, and chartered as a city in 1846. Pop. 578,249.

**Mimamsa** (Skt., investigation). Indian philosophical system of the Vedas (q.v.). It is divided into the Purva-Mimamsa and the Karma-Mimamsa, and the foundation of the doctrine is attributed to the teacher Jaimini. The text consists of about 2,600 *sutras*, or short concise axioms, arranged under various heads and chapters, the whole forming a criticism and interpretation of Veda doctrine, and touching many metaphysical and moral problems.

**Mime** or **Mimus**. Old form of dramatic play in vogue among the Greeks and Romans. It was a farcical, frequently coarse and indecent representation of incidents of real life, given as a popular entertainment at particular festivals. The Latin mime was described by Scaliger as a poem imitating any action to stir up laughter: the Greek form was in prose. The Greek mime originated in Sicily, its inventor being Sophron of Syracuse (c. 440 B.C.), who wrote in the Doric dialect. The Roman mimes were first put into literary shape by Laberius (105-43 B.C.) He was

forced by Julius Caesar to appear on the stage in one of his own characters, thereby losing his equestrian rank.

The ballet (q.v.) uses silent miming in combination with classical dancing. Modern themes, demanding less poetic and more rigorous and expressive form, make greater use of mime. See illus. Union Pacific, p. 890.



Milwaukee, Wisconsin. The Civic Centre of the American City

**Mimicry**. Term in zoology. Its meaning is the assumption of the characters of one animal (the model) by another individual or group of animals (the mimic). The majority of examples of the phenomenon occur among insects. The resemblance of one animal to another must be distinguished from the likeness of an animal to its surroundings, usually referred to as protective colouring. (See Colour: in Animals, p. 2446.)

The first scientific account of mimicry was given by Bates in 1862, in connexion with a group of butterflies of the Amazon valley, known as the Heliconinae, which are strikingly marked by yellow and black wings. This warning or sematic colouring has been copied by other butterflies of that region. Bates concluded that the models had offensive odours or tastes and were avoided by birds, lizards, and monkeys, whereas the mimic is frequently edible. This is often called Batesian mimicry, by which an edible, scarce, or feeble species adopts the appearance of a distasteful, abundant, or well-protected species. Other examples are the likeness of certain clear-winged moths to wasps and a cuckoo's egg to those of its foster parents.

Another type of mimicry is described by Müller (Müllerian

mimicry). He suggested that while young birds were gaining by experience a knowledge of distasteful objects, some individuals had to be sacrificed. If spread over two similar species, the experience could be obtained at a lower cost to each species. An example may be taken from the butterflies of the family of Heliconinae, of the genera *Ituna* and *Thyridia*, which are distasteful and have a common warning colouring. In this type of mimicry there is no deceit but a simplification of the lesson to be learnt by the potential predator.

Model and mimic must have the same geographical range; model must always be more numerous than mimic, otherwise the latter becomes a danger; and mimic and model must behave similarly in the presence of a predator. Tropical forests produce more examples of mimicry than other environments, because of their favourable conditions for insect life and the sharp fluctuations of light and shade.

The evolution of these mimicry patterns is a complex genetic problem, especially where it is obvious that some of the most elaborate mimetic adaptations are controlled by the action of a single gene. While this gene must have arisen spontaneously by mutation, it is fallacious to consider that the exact resemblance that it controlled did so too. A gene does not necessarily exercise the same effect on its first appearance in an animal as it does subsequently. Slow and apparently continuous modification of the mimic probably occurs by recombination and mutation of the whole gene complex, under the guidance of natural selection, whereby the most successful of the mimics survive.

A classic example in which the genetic situation has been elucidated is the polymorphic swallow-tailed butterfly *Papilio polytes*, which is widely distributed in the Orient. There are three female forms: *cyrus* resembles the non-mimetic male, *polytes* is an excellent mimic of *P. aristolochiae*, and *romulus* is very similar to *P. hector*. Where both models occur, e.g. in Ceylon, all three female forms are found; where *P. hector* is absent, e.g. in Hong Kong, so is *romulus*. A single sex-controlled dominant factor converts *cyrus* into *polytes* and another similar factor converts *polytes* into *romulus*, provided always that the first factor is present. See Darwinism; Genetics; Insect. Consult Mimicry, G. D. H. Carpenter and E. B. Ford, 1933.

E. R. Trueman

**Mimir.** In Norse mythology, guardian of the fountain of wisdom in the lower world. Odin purchased a draught from the fountain with one of his eyes, and thus was enabled to spread wisdom among men. Mimir was a hostage given by the Aesir to the Vanir, who beheaded him; but Odin uttered spells over the head that it might still advise him.

**Mimnermus** (fl. c. 620 B.C.). Greek lyric poet. A native of Smyrna, he was the first to use elegiac verse regularly for the themes of love and lament. Fragments only of his work survive.

**Mimosa.** Large genus of herbs, shrubs, and trees of the family Leguminosae, chiefly natives of America.

The leaves are twice divided into small leaflets, and are often sensitive, folding up at a touch, or under atmospheric changes. The small yellow flowers are closely packed in round heads or cylindrical spikes. The mimosas are frequently confused with the Australian wattles (*Acacia*), but no species of *Mimosa* is a native of Australia.

**Mimulus.** Genus of annual and perennial herbs of the family Scrophulariaceae. The musk (*g.v.*) is the best-known species. They are natives of America, Asia, E. Africa, and Australia, and were introduced into Britain in 1826. See Monkey-flower.

**Min.** Egyptian deity. Perhaps introduced from Punt, he was the god of fields and the desert routes, especially worshipped at Coptos and at Akhmim, whose Greek name Panopolis is due to his identification with Pan. Petrie's Coptos excavations, 1894, revealed three limestone colossi of the god, the oldest Egyptian statuary. In the

XIXth dynasty Min was absorbed by Ammon, and portrayed as a tightly swathed man with the double plume, his right arm holding a flail.

**Min.** Name of two rivers in China. One is a tributary on the left bank of the Yang-tse, which it joins near Suifu. It rises in the N. of Szechuan prov. at an elevation of 13,000 ft., and is navigable for 200 m. The other river is in Fukien prov. Including the longest of its three headstreams, it is 350 m. in length. Foochow is situated on it. Owing to the bar at the mouth, large ships can only enter the river at high tide. See China; Foochow.

**Mina.** Ancient Greek weight and money of account, varying in Asia Minor and different parts of Greece. Though not coined, the money of account equalled one-sixtieth of a talent and was worth between £3 and £4.

**Mina OR MYNAH** (*Gracula religiosa*). Passerine bird of Southern India, sometimes called the grackle or grakle.

About the size of the English black-bird, glossy black in colour, with purple, violet, and green iridescence, it has a white patch on the quill feathers of the wings, a curved orange bill, yellow legs, and behind the eye a naked, fleshy yellow excrescence which joins the top of the head. There is also a bare patch below the eye. Minas are described as fruit-eaters, but are very familiar from their habit of visiting verandahs for the purpose of feeding upon the insects that shelter there. They are easily tamed, and in addition to their natural whistling capabilities can be taught to pronounce words quite distinctly.

**Minaret.** Term used for a slender tower of moderate height, with one or more balconies, from which Mahomedan priests summon the people to prayer at certain hours. See Mahomedan Architecture.

**Minas.** Town of Uruguay, capital of the dept. formerly called Minas, but now renamed Lavalleja. It is 70 m. direct and about 80 m. by rly. N.N.E. of Montevideo. In the vicinity are marble and granite quarries. Founded in 1784, it has a pop. of 9,000.

**Minas Geraes.** Inland state of S.E. Brazil. It is bounded N. by Bahia and S. by Rio de Janeiro. The second most populous and fifth largest state of Brazil, it is

watered by the São Francisco, the Parahyba, their tributaries, and many other rivers. Mainly a forested plateau, with an alt. of 2,000 ft., it is traversed by the Sierra do Mantiqueira and the Sierra do Espinhaço, and contains Mt. Itatiaia. Manganese, gold, diamonds, and other precious stones, coal and iron are found, but not extensively worked. The chief industries are stock-raising and agriculture. The principal products are coffee beans, sugar, tobacco, cotton, rice, potatoes, cheese, and butter. Ouro Preto was the capital until 1897, when it was supplanted by Belo Horizonte. Area 221,951 sq. m. Pop. 7,556,000 including several thousand Botocudo Indians.

**Minbu.** Dist. and river port of Burma, on the Irawadi. The dist. lies between the Irawadi and the Arakan Mts. Rice and oil seeds are the chief crops. The port is on the right bank, almost opposite Magwe in the lower section of the river, where there is no rly. Dist., area 3,302 sq. m.; pop., 302,373. Town pop. 6,700.

**Minch.** Name for parts of the channel E. of the Outer Hebrides, Scotland. It consists of the Minch and the Little Minch. In the N. the Minch varies from 20 to 45 m. in width; the Little Minch, W. of Skye, being from 15 to 20 m. wide. The channel is a rift valley.

#### Minchinhampton.

Town of Gloucestershire, England. It is 4 m. S.E. of Stroud, and 12 m. S. of Gloucester. It is now chiefly residential, though one mill remains as a relic of the formerly prosperous cloth industry. The chief church is Holy Trinity, dating in part from the 13th century. From Minchinhampton Common, 660 ft. high, a fine view of the Cotswolds is obtained.

There are two golf courses. Population (estimated) 3,500.

**Mincing Lane.** London thoroughfare. Between Rood Lane and Mark Lane, it connects Great Tower Street with Fenchurch Street, E.C. Before it was half demolished by German bombs in 1940-41, it was a centre of the tea and rubber trades. Here was the hall of the Clothworkers' Company



Mimosa. Flowers and leaves of this American shrub



Mimulus. Leaves and flowers of musk, *Mimulus moschatum*



Minaret or tower of Mahomedan mosque

(*q.v.*), the garden of which, containing the tower of the old church of All Hallows Staining, was formed from the churchyard of that building. The body of the church was demolished in 1870, when its monuments were removed to S. Olave's, Hart Street. The lane is named after houses which belonged to the *mynchens*, or nuns, of S. Helen's.

**Mincio.** River of N. Italy. Issuing from the S. end of Lake Garda, it flows S. and S.E., joining the Po 10 m. S.E. of Mantua, up to which it is navigable, after a course of 116 m. Near its banks several battles were fought: Castiglione, 1796; Solferino, 1859; and Custoza, 1848 and 1866.

**Mind.** In general, the opposite of matter, more particularly, the thinking part of man, the cognitive faculty which is mainly concerned with intellectual processes. In this sense it is contrasted with soul (*q.v.*), which is mainly concerned with the various forms of feeling, volition, and emotion. The word *nous* (mind), as used by the Greek philosopher Anaxagoras in the sense of the arranging principle of the world, involved the idea of consciousness and design. The same idea appears to some extent in the monads of Leibniz. According to the modern definition, mind is a collective term, denoting the sum-total of all mental processes, which are themselves only different functions of the nervous system, especially of the brain.

In regard to the relation between mind and body (matter), there are three principal hypotheses. Dualism (*q.v.*) regards the mind as a substance existing side by side with, and independently of, the body. Its supporters argue that the essential characteristics of matter are extension, change, and movement in space, and it has never been shown how mental phenomena, the characteristics of which are unity and identity, can be produced from movement and change.

Materialism (*q.v.*) regards mental phenomena as mere bodily functions, like the digestion of food. But it is difficult to see how thought (consciousness) can be reduced merely to this, for the movements which take place in the body remain unconscious, whereas men themselves are conscious of their thoughts. The most we can say is that thought is no doubt connected with certain functional movements of the brain which are necessary to it under present conditions; but, though connected with these functions, it

is yet distinct from them. The materialist, however, argues that it is difficult to conceive a satisfactory positive notion of an intellectual substance, not merely regarding it as the negative of body. Idealism (*q.v.*) sees in bodies and external phenomena only the manifestations of intellectual beings; mind is the reality, all else is derived from it, or is appearance.

The object of mental philosophy is to arrive at a unitary conception of the aggregate of mental phenomena; but whereas the individualistic theory assumes a plurality of independent intellectual parts, by the cooperation of which a unity of the intellectual life of the world is produced, universalism regards this unity as prior in time, and the different intellectual phenomena as manifestations of a universal world spirit.

**Mindanao.** Second in importance and size of the Philippine Islands. Irregularly shaped, with a long peninsula stretching out to the W., its main portion measures about 300 m. from N. to S., and 150 m. from E. to W., while it has an area of 36,537 sq. m. It is almost cut into two parts by the bays of Iligan on the N., and Illana on the S. of the peninsula, and its shores are indented by other bays.

The surface is in general very mountainous, the loftiest summits being the active volcanoes of Apo, 10,312 ft., and Malindang, 8,562 ft. Most of the rivers are small, but the Agusan and the Rio Grande de Mindanao traverse the greater part of the island. Lakes are numerous. The climate is hot, and the rainfall heavy, the annual fall often exceeding 100 ins. The island is subject to earthquakes, a disastrous visitation in 1897 causing much damage, including the destruction of the town of Zamboanga, since rebuilt. Hemp and copra are the chief products. Timber is largely obtained, minerals are worked to some extent, and cattle rearing is carried on. The inhabitants, who number 560,000, are mostly of Malay stock, about one-third being Christians, and the majority of the remainder Mahomedans.

Japanese forces began the conquest of the Philippines in Dec., 1941, and attacked Mindanao on Dec. 20, making landings at Davao. In March, 1942, there were further landings at Zamboanga, the small garrison withdrawing into the interior of the island. Davao and the airfields on Mindanao were attacked by U.S. aircraft in 1944; but the island, heavily prepared by the Japanese for defence against

attack, was bypassed when U.S. landings were made on Leyte in October. On March 3, 1945, U.S. troops landed on Mindanao and advanced towards Zamboanga, meeting with little opposition. Davao was recaptured on May 5, and by the end of the month the remaining Japanese troops were contained in a small area in the centre of the island, where they continued to resist until Japan surrendered in August.

**Mindel.** In geology, the second of the four major glacial phases recognized in the Alps. These phases, Gunz, Mindel, Riss, and Würm, are separated by interglacial periods, when the glaciers retreated to approximately their present position.

**Minden.** Town of W. Germany, a district capital of N. Rhine-Westphalia. It is on the river



Minden arms

Weser, in hilly country some 40 m. W. of Hanover, on the Berlin-Cologne rly, and the great Midland canal. Originally a Roman settlement, seat of a bishopric from the time of Charlemagne until 1634, it founded, with Münster and Osnabrück, the Westphalian league of cities. It came under the rule of Prussia in 1848. It was the scene of a famous victory of British and allied Hanoverian and Brunswick forces over the French in 1759. (See Minden, Battle of.)

The town had a remarkable early Gothic cathedral (13th cent., with portions dating from 1065), S. Mary's (1022-36), S. Martin's (11th and 12th cent.), very severely damaged in the Second Great War. The Gothic town hall (13th) was gutted, the arcade alone surviving. Minden's industry produced chemicals, machinery, cigars, textiles, furniture, meat, and preserves; boat building, iron founding, and inland shipping were other trades flourishing. The town was cleared April 5, 1945, by the British 6th airborne div.; after Germany's surrender it lay in the British zone of occupation. Pop. (1950) 37,050.

**Minden, BATTLE OF.** Fought between the British, with their Hanoverian allies, and the French, Aug. 1, 1759. Under Ferdinand of Brunswick, a British and Hanoverian army was operating in N. Germany. Defeated at Bergen in April, it fell back before the French, who occupied Minden in July. To retire farther would have been to leave Hanover to the

mercy of the French, so Ferdinand decided to fight.

The French army, 60,000 strong, commanded by Contades, occupied a strong position to the S. of Minden, the Weser protecting one flank, and a morass the other. The British and their German allies had 52,000 men, and the engagement began when 7,000 of them were sent to cut the enemy's communications with Kassel. The French met this threat by ordering a general attack, which was anticipated by Ferdinand, who moved more troops into the threatened position, while six English, followed by three Hanoverian, battalions advanced to the attack.

In two lines they marched steadily across the plain, swept by a cross-fire from both flanks, until they were charged by the French cavalry, which they routed with a most destructive fire at close quarters. The battle was won, and the French army fell back to Minden. Lord George Sackville refused to advance with his cavalry, thus enabling the French to retreat in fairly good order. The French lost 7,000, and many guns and colours. The allies lost

2,600, half being British, of whom about 10,000 were on the field. The six Minden regiments are 12th, Suffolk; 20th, Lancashire Fusiliers; 23rd, Royal Welch Fusiliers; 25th, King's Own Scottish Borderers; 37th, Hampshire; and 51st, Yorkshire Light Infantry.

**Mindoro.** One of the Philippine Islands, ranking seventh in size. Situated S. of Luzon, from which it is separated by Verde Island Passage, 7 m. broad, it is 100 m. long by 60 m. broad, and covers an area of 3,579 sq. m., excluding several small dependent islands. Its surface is mountainous, rising in Mt. Halcon to about 8,850 ft., and extensively wooded. Calapan is the capital.

Mindoro was occupied by Japanese forces in March, 1942. While operations were in progress on Leyte, U.S. troops landed on Mindoro, Dec. 15, 1944. Meeting little opposition they advanced inland and Japanese resistance ended.

**Mindszenty, József** (b. 1891). Hungarian cardinal, central figure of a political trial arousing world-wide interest in 1949. *See* Hungary in N.V.

## MINE: SEA AND LAND WEAPON OF WAR

David Le Roi, specialist in Military and Naval Mechanics

*Here is a description of the principal types of sea and land mine used up to the end of the Second Great War, together with an account of methods used to detect them and render them inoffensive.*

*See also* Booby Trap

A mine is an offensive or defensive weapon consisting of a charge of high explosive in a metal or other container and detonated by a fuse actuated by impact, pressure, electric impulse, magnetism, or sound waves. Mines are of two main types: naval and military; the former is used either defensively or offensively, while the latter is essentially a defensive or delaying weapon.

**NAVAL MINES.** These were first used in 1573 at the siege of La Rochelle, and consisted of small barrels of gunpowder fitted with a burning fuse and allowed to drift with the tide against the investing ships. Similar mines were used by Gustavus Adolphus in 1630, when they were set adrift in rivers to be carried by the current against German-held bridges. These early mines were generally ineffective, as were the moored type used by the Americans in 1777 to protect certain of their ports during the war of Independence. Mechanically-operated mines were used by the Russians in the Black Sea operations of the Crimean war, but achieved very little success.

In 1839, Pasley invented an electrically-operated mine, and by the middle of the century such mines had been adopted by most maritime nations. Called controlled or observation mines, they were suspended some feet below the surface of the water and were used mainly for defending harbours. Fired electrically from the shore, they were detonated by the closing of a switch. This type of mine destroyed nine warships in the U.S. Civil War and took heavy toll of shipping in the Franco-Prussian war (1870), the Russo-Turkish war (1878), and the Spanish-American war (1898).

Controlled and observed minefields defending British naval bases reached a high degree of efficiency in the First and Second Great Wars. The shore station controlling this type of minefield is equipped with a chart of the minefield superimposed on a glass screen: each mine is in electrical contact with the screen, and when a hostile ship moves in the vicinity its course is registered by a spot of light crossing the screen. When the light passes the first barrier of mines, a

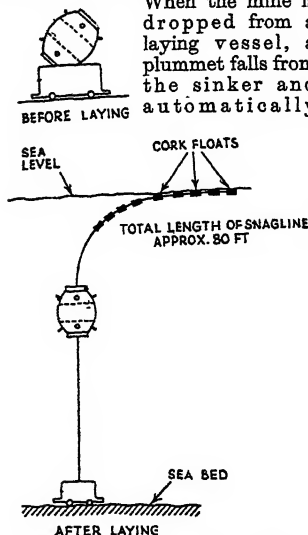
firing key is pressed and one or more mines in the neighbourhood of the ship are exploded. The control system is such that an enemy ship passing over the minefield is almost certain of destruction, even in darkness or fog. A breakdown in the controlled minefield at Scapa Flow permitted a German submarine to enter and sink the battleship Royal Oak, Oct. 14, 1939.

In 1900, the British navy began large-scale development of contact mines. The early types were fired on impact by means of a mercurial contact-maker and a primary battery, but proved uncertain in action. Like all hollow, submerged vessels, the mine chamber was excessively damp, causing rapid discharge of the battery, while the mercury of the contact maker oxidised and failed to function. In the Russo-Japanese war of 1904-5, contact mines sank a number of warships, but they were liable to rapid deterioration owing to the action of sea-water. In 1915 the British navy designed a new mine which eliminated previous defects. To prevent the damp atmosphere of the mine chamber from exhausting the battery, the activating liquid for the latter was contained in sealed glass tubes placed in lead horns projecting outside the mine chamber. Although numerous improvements were later made in their destructive power, contact mines used by belligerents in the Second Great War were based on the same principles as those introduced by the British in 1915.

There are various sizes and shapes of naval contact mine, the most common consisting of a barrel-shaped buoy 3 ft. in diam. and weighing 650 lb. (Fig. 1.) One half of the interior is occupied by the air chamber which keeps the mine buoyant, the other is filled with 500 lb. of T.N.T. From the top of the mine casing project the half dozen lead horns enclosing the glass tubes containing the activating liquid for the detonating battery. Immediately one of the tubes is broken by the impact of a ship, the chemical pours down upon the battery, which then explodes the mine. Sometimes the mine's radius of action is extended by having attached to one of its horns an 80-ft. rope, called a snag-line (Fig. 1.), which is supported on the surface of the water by cork floats. When a ship fouls the cable the mine is fired. Others have thin wire antennae attached to the horns which fire the mine electrically when they come into contact with a ship's hull.

Attached to the base of the contact mine is a sinker, which holds the mooring cable wound on a reel.

When the mine is dropped from a laying vessel, a plummet falls from the sinker and automatically



Mine. Fig. 1. Buoyant or moored mine: (upper diagram) resting in wheeled launching trolley which also acts as sinker and mooring device; (lower diagram) attached to a sinker, on sea bed, and floating below water level, with snagline on surface

*Courtesy of Discovery*

releases the mooring cable, which pays out and allows the mine to rise. Immediately the plummet touches the sea bed, the cable is locked on its reel, and the weight of the sinker drags the mine down to the required depth. Moored mines can be laid to any depth down to 100 fathoms (600 ft.) in tidal waters, and to considerably greater depths where the waters are tideless. Deep-laid mines are used against submarines, shallow-laid mines against surface craft.

Transporting and laying mines is a specialised branch of naval work and is done from vessels designed for the purpose. At the outbreak of the Second Great War the Royal Navy had in commission one large minelayer of 7,000 tons and some 20 smaller layers averaging 800 tons each. As hostilities proceeded, the fleet was greatly expanded by new construction and conversions. Every class of naval or merchant vessel from a battleship to a trawler can be, and has been, used for minelaying. The average naval minelayer releases 300 mines on one voyage.

Mines are stowed in the layer resting on their sinkers, which have wheels on their bases and run on rails laid fore and aft of the ship's

deck. The mines are trundled along the rails until they reach the mine traps, a series of ports cut in the vessel's stern. There they are held by "dogs" until the traps are opened, when they run down the curved ends of the rails into the sea. Submarines are frequently used as minelayers, the largest stowing about 50 in the bow and stern torpedo tubes; submarines can release mines while submerged. In 1917 the Allies closed the Heligoland Bight with 16,000 mines laid by a flotilla of submarines. In the Second Great War, submarines laid mines off Axis-occupied ports in Europe and N. Africa. Large numbers of sea-mines were also laid from aircraft, though the number that can be carried by an aeroplane is small.

During the First Great War, over 250,000 moored contact mines were laid by the various belligerents and caused more losses at sea than any other weapon except the torpedo. Some 172,000 were laid by the Allies in the English Channel, the North Sea, and the Baltic. On the other hand, the British blockade prevented the Germans from laying more than 43,000 mines, 50 p.c. of which were removed by Allied sweepers.

In the First Great War the risk of ships being sunk by moored contact mines was considerably reduced by equipping them with a self-protecting device consisting of a cable stretching from the bow to paravanes on either side. The paravanes were shaped somewhat like an elongated pear, and were set with a steering mechanism which kept the cable well spread away from the ship. As the cable came in contact with the mine's mooring wire, the danger ahead was indicated, and the ship could avoid it by altering course.

Minelfields were swept by vessels equipped with Oropesa sweeps, so called after the name of the trawler in which they were first tried during the First Great War. The Oropesa sweep consists of a kite and kite wire, a sweeping wire, an otter, and a float. The kite and the otter both comprise a square

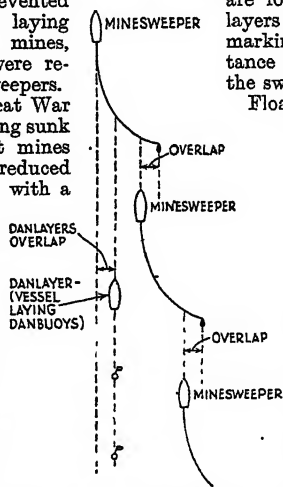
metal frame with transverse inclined planing surfaces. Kite and otter are attached by cable to the sweeper in such a way that the kite surfaces are horizontal and those of the otter vertical. The sweep wire, fitted with cutting edges or small explosive charges for severing mine moorings, is towed by the kite wire. The kite takes the sweep down to the required depth and keeps the in-board end of the sweep in the track of the minesweeper. The otter is supported at the desired depth by the Oropesa float, and is so slung that it sheers well away from the minesweeping vessel and gives spread to the sweep wire. When the sweep wire cuts the mine's mooring cable, the mine floats to the surface, where it is sunk by rifle fire.

Each sweeper pays out 600 yds. of sweep wire and sweeps a lane 250 yds. wide according to the tide. Sweepers work in flotillas and maintain a staggered formation, so that the following vessels steam well inside the swept lane of the preceding sweeper. The sweepers

are followed by dan-buoy layers which drop a line of marking buoys some distance within the edge of the swept channel (Fig. 2).

Floating mines are some-

what similar to the moored type, except that they are unanchored and drift with tides and currents. They are used for attacking ships sheltering in a harbour by allowing the tide to drift them in, or are dropped in the wake of a ship or squadron by a ship that is being chased. The floating mine is slightly heavier than the water it displaces and therefore sinks slowly. On passing the pre-arranged depth, a hydrostatic valve switches on elec-



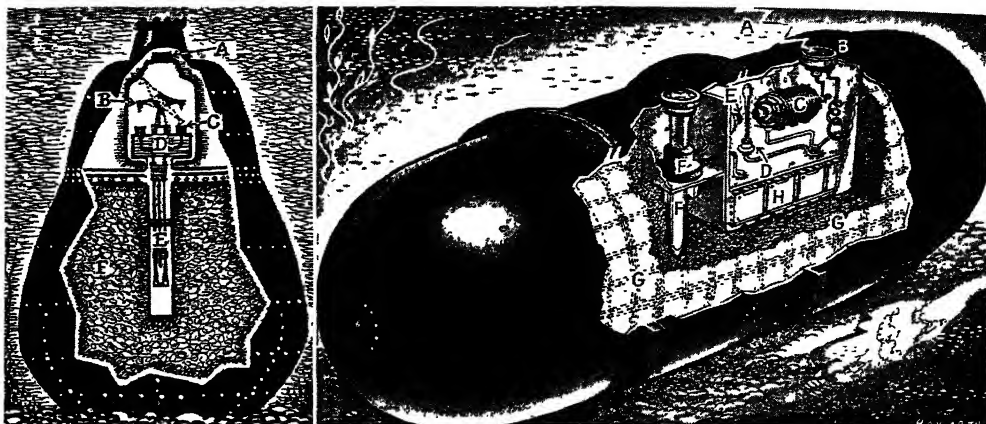
Mine. Fig. 2. Sweeping moored mines. The vessels, equipped with Oropesa sweeps, steam in echelon, so that the swept lanes overlap. The limits of the swept areas are marked by vessels placing dan-buoys well within the limits

*Courtesy of Discovery*

trical power which drives a propeller on the bottom of the mine and causes it to rise until at a certain depth the power is automatically switched off and the mine begins to sink again.

By the Hague Convention, floating mines should become inactive one hour after they have been set adrift. International law also





Left, magnetic mine. When a steel ship passes over the mine it attracts upwards the small balanced magnet B until the opposite end is forced down and closes an electric circuit at C. A weak current is induced and, strengthened by the relay D, fires the detonator E, which ignites the explosive charge F. The mine remains harmless until the

seal A has dissolved. Right, acoustic mine. Sound waves, A, generated by a ship's propeller are picked up by the hydrophone B, and vibrate the trembler C, and the electro-magnet D, supplied by battery H. When sound waves reach a specific intensity, the trembler contacts E, closing the circuit which fires detonator F, so igniting charge G.

Mine. Fig. 3. Sectional diagrams of the magnetic and acoustic types

requires that moored mines coming adrift must automatically be rendered harmless; this is usually done by means of a switch which floods the mine and causes it to sink immediately its mooring cable snaps. The Hague Convention further provides that moored mine-fields may be laid only to protect harbours, bottle-up an opposing fleet, or confine shipping to narrow unmined channels where they can be most conveniently handled for contraband control. Moreover, the position of all permanent mine-fields must be announced by the laying power, and patrols must be maintained to prevent shipping of neutral countries from moving into mined areas.

It was because of the comparative ease with which a moored minefield could be swept by an enemy enjoying naval superiority that the Germans developed the static, or ground, sea mine in the Second Great War. A ground mine is one which rests on the sea bed and remains inactive until it is detonated by the pressure, acoustic or magnetic influence of a passing ship. Size for size and charge for charge, a ground mine is much more destructive in effect than a moored or a floating mine. Not only is the velocity of detonation very great, but the explosion gives rise to an enormous pressure impulse, which reaches the surface of the water in the form of a huge bubble of gas travelling at the speed of sound. Secondary pulses from the expansion and contraction of the bubble contribute to the destructive effect. This pressure

impulse is greater when the mine is laid on a hard sea bed than when on soft sand; the latter absorbing some of the explosion.

The first ground mine used in the Second Great War was the magnetic mine (Fig. 3) dropped from a German aircraft off Shoe-buryness in Oct., 1939. The mine consisted of a metal cylinder fitted with 700 lb. of T.N.T., and with a magnetic detonator actuated by the permanent magnetism induced in a ship's hull by the hammering that takes place during its construction. The detonating mechanism consisted of a magnetised dip-needle enclosed in a sealed container. The seal dissolved shortly after the mine was laid and the needle was wound by a helical spring until it lay horizontal, with one end free and the other suspended over an electrical contact. When a ship passed over the mine, the free end of the balanced magnetised needle was attracted upwards until the opposite end was forced down to complete the electric circuit which fired the explosive charge. In order to prevent the explosion of one magnetic mine detonating others in the vicinity, a pendulum mechanism broke a circuit when the mine received a shock. Owing to the comparatively short distance which must exist between ship and mine for the latter to be fired, magnetic mines were always laid in fairways and other shallow water.

Ships were given individual protection against magnetic mines by the device called degaussing (*g.v.*), while the mines themselves were

swept by a variety of means. The most efficient magnetic-mine sweeper consisted of a degaussed vessel towing two 500-yd. lengths of self-buoyant electric cable. Periodically, a current of 2,700 amps. was passed through an electrode at each end of the cable, thus creating a magnetic field which fired the mines over a wide area. For sweeping narrow channels in very shallow water, the towed skid was used, consisting of a raft carrying a large solenoid and towed by a degaussed motor boat. Current supplied from the towing vessel passed through the solenoid and induced a magnetic field which exploded the mines. Some success in sweeping these mines was achieved with Wellington bombers equipped with a ring of copper extending under the wings and from nose to tail. A heavy electric current passing through the ring created a magnetic field capable of setting off the mines provided the aircraft flew sufficiently low.

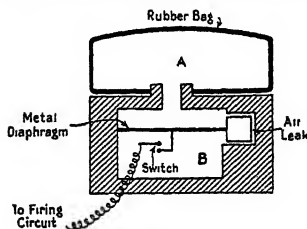
In 1940 the British introduced an improved type of magnetic mine which was extremely difficult to sweep. Fitted with a period-delay mechanism, it had to be swept over at least 12 times before it was detonated by the sweepers' strong magnetic field; on the other hand, it was immediately fired by the weaker field of an ordinary ship.

Acoustic mines (Fig. 3) were used by both sides in the Second Great War. When the sound waves from a ship's propeller reached the mine-casing, vibrations were set up



on the casing which were transmitted to a contact arm inside the mine and in "tremble" contact with the case. The vibrations caused the contact arm to oscillate and close an electric circuit which operated a relay to detonate the fuse and fire the charge. German acoustic mines were swept by vessels carrying an electrically-driven hammer in a steel box fitted some distance beyond the bows. The intense noise thus produced detonated acoustic mines some distance ahead of the ship. The British acoustic mine was virtually unsweepable as it incorporated a supersonic detector which could distinguish between the vibrations of a propeller and of a hammer.

One of the German defensive measures against the Allied landings in Normandy, June, 1944, was



Mine. Fig. 4. Pressure unit of a German acoustic mine (naval). Pressure created by water displaced during the passage of a ship compresses the air-filled rubber bag A, which forces air into the chamber B. As the air returns through the air leak, the metal diaphragm is lifted upwards, closing the contact switch and causing an electric impulse to flow through the firing circuit to detonate the charge

*Courtesy of Discovery*

the pressure mine (Fig. 4). This consisted of a large version of the anti-tank mine (v.i.) filled with some 500 lb. of T.N.T. and surmounted by a rubber bag filled with air. When a ship passed over the mine, the water pressure between ship and bag was increased, so causing the air inside the bag to be forced downwards into an air chamber; as the air returned through an air leak it lifted up a thin metal diaphragm, which pressed against an electrode and, completing an electric circuit, fired the charge. The pressure mine had been invented, but not used, by the British Admiralty some years previously, so that it was comparatively simple to institute protective measures. As the pressure exerted by a ship depends on its speed, vessels were relatively safe if they moved slowly over pressure-mine areas. As these mines were laid in very shallow water, they were removed by divers.

Throughout the Second Great War, Britain laid 263,088 mines, of which 56,300 were laid by aircraft of all types, including 47,250 by Bomber Command. Resultant casualties to the enemy were 1,047 warships and merchant vessels sunk and 541 damaged; 251 German sweepers were lost while clearing British mines, and a force of 30,000 officers and men was continuously employed mine-sweeping in the Baltic and off ports in occupied Europe. Britain used 1,533 vessels for sweeping German mines and lost 263 sunk; the total minesweeping personnel was 57,000. For some years after the war, flotillas of British sweepers were engaged in clearing the navy's defensive minefields; German minefields were cleared by German sweepers and crews commanded by British officers.

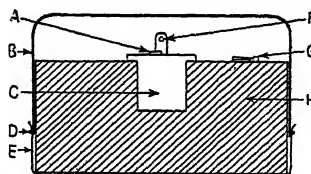
Of the 2,426 British merchant ships lost during the war, 296, totalling 816,255 out of 11,352,933 tons, were sunk by mines.

**MILITARY MINES.** Until the large scale use of the tank in the latter stages of the First Great War the military mine was a tunnel driven towards the enemy's defences in order to lay an explosive charge. Such offensive operations had been practised from very early times, and reached a high development in the First Great War; notably at Messines Ridge on June 7, 1917, when a series of mines containing a total of 450 tons of explosives was exploded simultaneously over a front of 7 m.

With mechanisation and consequent mobility, there were few opportunities for using tunnelled mines, and the military mine came to mean the defensive and delaying weapon rapidly developed in the Second Great War. All the belligerent armies used vast numbers of these mines, which were divided into two main types, anti-personnel and anti-tank. The anti-personnel, or jumping, mine consisted of a cast-iron, open-topped container having fixed to its inner base a ballistite cartridge. Resting on the cartridge was a second container filled with some hundreds of small steel balls surrounding a central core of explosive. Projecting from the top of the inner container were two or more antennae of thin but rigid metal connected to a firing pin in contact with the ballistite cartridge. The mine was buried in the ground so that only the antennae protruded.

Pressure of a man stepping on the antennae fired the ballistite cartridge, which discharged the

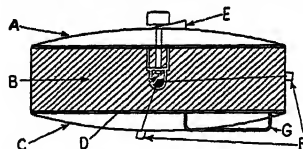
outer container some six feet above the ground. As the container left the inner casing, a trip actuated a fuse which in turn detonated the core of explosive and scattered the



Mine. Fig. 5. British Mark V anti-tank mine. Pressure of a vehicle passing over the top plate A forces down the firing pin B, which, cutting the shear wire C, fires the detonator D, so firing the charge E. E is the bottom of the case containing the charge, and G the safety pin which is inserted in the hole on top of the firing pin, so rendering the mine safe for transport; D is the housing for anti-lifting device

steel balls over a radius of some 200 yards. When time permitted and the ground was suitable, the mines were joined by trip wires attached to the antennae and lightly covered with earth; when a trip wire was disturbed a number of mines detonated simultaneously. The only effective method of breaching an anti-personnel minefield was to drive a tank through it, as the mines were ineffective against armour plating.

The principal anti-tank mines of the Second Great War were the British Mark V (Fig. 5) and the German Teller (Fig. 6). The Mark



Mine. Fig. 6. German Teller anti-tank mine. Pressure of a vehicle passing over the top plate A forces down the firing pin B, which explodes the detonator D, so igniting the charge C. C is the bottom, or base plate; F, anti-lifting device housings; G, lifting handle

V consisted of a lower, circular case of metal 8 ins. in diam. and filled with 8 lb. of explosive charge. Set in the centre of the explosive was a detonator connected to a firing pin fixed to the top of the case. Resting on the firing pin was a circular lid which acted as a pressure plate. The total height of the mine was 5 ins. The Teller mine, which worked on a similar principle, contained 11 lb. of H.E. and was 12 ins. in diam. and 3 ins. high. Anti-tank mines were buried just below the surface of the ground, and the pressure of any

vehicle, even a motor-cycle, passing over the pressure plate forced the firing pin down and exploded the charge. In normal ground the explosion made a crater up to 5 ft. in diam. and would blow off the track of a tank.

For the mining of roads, box mines were used, the most efficient being the German Hoelst. It comprised a long narrow box, 4 ft. long, 18 ins. wide, and 18 ins. deep. The lid acted as a pressure plate and forced down one or more firing pins which detonated a charge of 15 lb. of T.N.T. The mines were buried just below road level and verges in echelon, so that four or five effectively covered approaching traffic. Road mines were designed not only to destroy or disable the vehicle detonating them, but also to crater the road sufficiently to prevent its use by following traffic.

When used on open ground anti-tank and anti-personnel mines were normally laid in checkerwise rows, with an interval of five yards between mines and five yards between rows. An anti-tank minefield a mile wide and 500 yards deep contained 35,000 mines. Where a minefield was laid to defend a position and not merely to cover a retreat, it was protected by a screen of artillery and machine-guns to prevent enemy clearance parties from breaching it.

Various devices were used for the detection of mines, the most successful being the Polish sonic detector and the Russian magnetic ring. The Polish detector, which was the standard detector of the Allied armies, consists of a 6 ft. bamboo pole, having at one end a flat fibre plate fitted with two magnets. The magnets are connected by a cable through the pole to an oscillator carried by the operator, who wears headphones connected to the oscillator. When it is switched on, the oscillator emits a note of constant pitch, which alters immediately the magnets pass over buried metal. The spot on the ground was then marked by a white metal cage, and the mine lifted and disarmed by hand. The Russian detector was similar in action, except that the presence of the buried mine was revealed by the deflection of a needle across the dial of a galvanometer set in the handle of the pole.

So successful were these detectors that the Germans tried to render mines undetectable by encasing the explosive in a non-conductive material such as wood or plastic. The most efficient of these mines was the Schoe anti-

personnel mine. It was eventually defeated by using dogs trained to "point" at ground recently disturbed by the burying of mines. Over 3,000 mine-detecting dogs served with the British army.

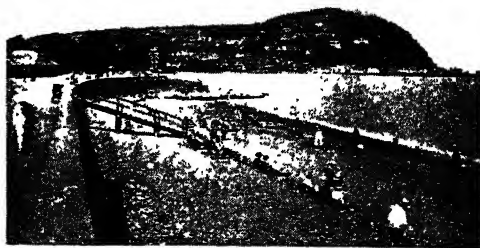
Searching for mines with detectors and clearing them by hand was at best a slow process and exposed personnel to fire from covering troops. In 1942, the flail tank, first used at Alamein, was introduced. This was a Sherman tank having in front a roller driven from the engine. Attached to the roller were a number of lengths of chain which beat upon the ground and exploded the mines as the vehicle moved forward.

For the protection of certain permanent vulnerable points, such as railheads, the electro-pneumatic mine was introduced. The mine was buried beneath the ground and had attached to it a length of rubber tubing lightly covered with earth. Pressure on the tubing created a flow of air which depressed a diaphragm on top of the mine, so closing an electrical circuit which fired the charge.

Mines had little application to aerial warfare, and the so-called land mines dropped on the ground by aircraft were merely large time-bombs released by parachute. Efforts were made to develop aerial minefields consisting of containers of explosives suspended from balloons and released in the path of attacking bombers. Although fitted with time switches to explode them after the raiders had passed, they proved an erratic weapon and liable to drift with the wind on to the course of defending aircraft.

**Minehead.** Urban dist. and market town of Somerset. It stands on the S. side of the Bristol Channel, 25 m. N.W. from Taunton, and 188 m. by rly. from London. S. Michael's church is a fine 14th century building, with a beautiful rood loft and other features of interest. The older part of the town is built on the side of North Hill, a bold eminence which protects the lower and newer part. At Quay Town, near the harbour, there are some old houses. Minehead is a popular watering place, from which Ex-

moor, Lynton, and other beauty spots in Somerset and Devon can easily be reached. It was a flourishing port in the Middle Ages, and for a short time was a corporate town. From 1558 to 1832 it sent



Minehead, Somerset. Promenade and sands looking west Frith

two members to Parliament, and it had fairs and markets. Market day, third Mon. Pop. 7,430.

**Minenwerfer** (Ger., mine-thrower). German bomb-projector used in the First Great War, nick-named "Minnie" by British troops. The spherical bomb weighed 200 lb. and was fitted with a rod which fitted into the barrel of the projector, the missile being fired by a large ballistite cartridge. The *minenwerfer* was eventually replaced by the heavy mortar. See *Mortar*.

**Mineo** (anc. *Menaenum*). Town of Sicily, in the prov. of Catania. Situated on a hill, 21 m. by rly. S.W. of Catania, it was founded by the Sicel leader Ducetius in the middle of the 5th century B.C. Near Lacus Palicorum was the temple of the Palici, revered as the holiest place in Sicily.

**Mineral Dressing.** A term covering the operations by which mineral ores, mineralised liquors, coal, oil, etc., are treated to remove worthless or undesired fractions and brought up to an acceptable standard for further treatment, shipment to customers, or direct use. Usually these operations involve little or no alteration of the physical constitution of the valuable portion of the crude material, and are carried out close to the source, to minimise transport of gangue or tailings, as the barren part of the mined ore is termed. Besides removing gangue, mineral engineers may be asked to separate a number of high-grade products from a given ore-body or to remove an element which would interfere with smelting.

The mined ore is crushed to the point where its constituent minerals are adequately broken apart

Then the liberated fragments or minute particles (according to the grain of the crystalline interlock comprising the ore-rock) are separated into (a) concentrates (the various desired minerals in their naturally occurring form but purified from associated minerals to a predetermined grade); (b) middlings (impure concentrates but worth further treatment); (c) tailings (valueless ore-rock which is discarded).

**LIBERATION.** All that is needed in grading industrial rock required *e.g.* for use as road metal, railroad ballast, foundry limestone, is to crush and screen it into grades or sizes, measurable by reference to two rings, one large enough to allow the screened material to pass through it (undersize or *minus*), one too small for it to pass through (oversize or *plus*). Grading gives place to screening when the width of the pieces to be graded is less than about 2 ins. Industrial powders are controlled down to sizes less than one micron ( $\frac{1}{2540}$  mm.). For many industrial purposes the size of the particle determines its reaction rate, or its physical behaviour in the paint, cement, plastic, pulverised coal, cosmetic, aggregate, catalyst, abrasive, etc., in which it is to be incorporated; and an important specialised technology is concerned with such measurement down to macro-molecular sizes only discernible with an electron microscope.

In liberation in the ore-dressing sense, rock may be delivered to the dressing plant (mill, concentrator) dry; slimy with barren clay-stuffs; inert or corrosive; clean-run or diluted with country-rock which should be removed before expensive crushing is begun; and at sizes varying from several feet (12 cu. ft. go to the ton in most ores) to dust fine enough to be dangerous to health. Primary and secondary crushing is typically done dry, using fixed-path machines which in from one to seven stages bring the material to the size of coarse gravel. At the same time, slime may be removed and the rock cleaned by washing, so that when the crushed ore is displayed on belt conveyors as it travels from machine to machine unwanted timber, "tramp iron," unexploded dynamite, country rock, etc., can be picked out. This hand-picking is an important stage in the "beneficiation" of raw coal.

During crushing many millions of tons of barren rock are discarded by heavy-media separation. This is a process using a high-density fluid formed by mixing

finely ground mineral matter (barytes, ferro-silicon, galena, mill scale are some of those used) with water in such a way as to maintain a stable pool at the desired density in a tank, floating rock being withdrawn from above and sinking rock from below. The fluid density determines the splitting point and is adjusted so as to discard all rocks too light (and therefore too low in their content of the desired mineral) to be worth treating. With coal, which is lighter than its attendant shale, the opposite gravitational considerations apply.

Fixed-path crushing machines have steel faces which alternately approach, and recede from, one another and which seize and smash the stream of rock falling between them. Primary crushers bring the ore down to c. 4-in. ring. The oldest, the Blake jaw crusher, has a fixed vertical face against which a swing jaw is pressed by eccentrically actuated toggles, giving nut-cracker action. In the gyratory primary crusher, a conical steel cone gyrates inside a heavy fixed ring of steel, crushing any rock nipped between the two faces as it rolls round its fixed circle. Secondary fixed-path crushers take the ore down to  $\frac{1}{2}$  in. or  $\frac{1}{4}$  in. by dry methods. Modified gyratory crushers, rolls (a horizontal mangle), hammer mills (swinging weights revolving in a cage together with flying rock) are typical. Somewhere about the  $\frac{1}{4}$  in. size fixed-path dry crushing ceases to be economical. Finishing by wet-grinding in tumbling mills is therefore usual. These are horizontal cylinders charged with heavy rods, steel balls, or pebbles through which the pieces of ore pass and are repeatedly struck by the flying crushing bodies set in motion as the mill turns on its axis.

**SIZING, SORTING.** When the ore has been liberated at sizes down to fine shingle, if there is some difference between the densities of particles of concentrate and gangue, separation by gravity methods follows. Screens are used to "police" the crushing circuit so that as soon as a particle is small enough to pass through a screen of "liberating" mesh-opening it is removed to the concentrating section of the plant. The oversize is returned to an appropriate crusher for further comminution. Such devices lose efficiency rapidly below 20-mesh (dry) or 65-mesh (wet), at which points sorting by size is abandoned in favour of classification by settling rate through a fluid.

**GRAVITY SEPARATION.** Some minerals—notably cassiterite, the chief ore of tin—can be separated on a commercial scale only by gravity methods. Others occur coarse enough for density difference between the valuable portion and gangue of sized or sorted feeds to be exploited in suitable appliances. These minerals include diamond gravels, gold, silver, and native copper, platinum sands, tungsten, ilmenite, fluor spar, barytes, galena, blende, various iron ores, and coal. Jigging is applicable down to somewhere between 20 and 50-mesh; sluicing and treatment on shaking tables to about 200-mesh; "vanning" and "budding" below that. In jigging, sized feed runs to a series of open boxes closed beneath by a retaining grid through which water can be violently pulsed and withdrawn. Equal-sorted sands are fed into horizontal streams of water. The small heavy particles burrow down while the bigger light ones are swept by the water over a discharge weir, helped by the jerky movements of the tables.

Most of the world's engineering metal is today concentrated by flotation (*q.v.*). The history of this method begins with Herodotus, who records that Amazonian maidens fished in ponds with goose-quills sticky with tar, which brought up specks of gold. The currently used process is based on the patents of Picard and Sulman, who in 1905 connected accurate control with the use of very small quantities of chemicals to produce a selective effect on the surfaces of the desired particles of ore, and on them alone. The steps in flotation are designed to develop a water-hating film on the desired mineral while leaving all the others wet. Once the ore-pulp has been brought to this state air is bubbled through it and the desired particles climb into the rising bubbles, and ride to the top of the flotation tanks or "cells," where they form a froth gleaming with its heavy load of concentrate. This concentrate is then skimmed off, and dried ready for shipping.

**OTHER PROCESSES.** The minute quantities of gold in its ores (perhaps only an ounce in several tons) are extracted by the Cyanide Process (*q.v.*). Other hydro-metalurgical techniques include the leaching of copper and the treatment of bauxite with hot caustic solvents to obtain aluminium. Sometimes ferro-magnetic properties are exploited to separate non-magnetic from magnetic particles

as they pass through a powerful field. At the Hermann Goering ironworks non-magnetic limonite was kilned in a reducing atmosphere to produce a surface of magnetic oxide, thus permitting a low-grade bog-iron ore to be brought up to metallurgical grade. Another process is the electrostatic separation of good from bad conducting particles in a high-voltage field. Radio-active minerals can be caused to signal their presence to Geiger-Muller detectors, which relay the message into electronic

controls and cause deflecting mechanisms to remove such pieces of ore from a passing stream.

Coal-cleaning uses jigging, sluicing (the Rheolaveur process), sink-float or heavy-media separation, and tabling for its upgrading from the contaminating material mined from narrow seams by mechanical devices which in the dark workings cannot be made to discriminate between true coal and dust-coated shales. *Consult Handbook of Mineral Dressing, A. Taggart, 1946; and the Mining Magazine.*

carbonates, and silicates. These range in complexity from simple salts such as sodium chloride (halite, NaCl) to the complex molecules of many silicates, such as orthoclase (potassium aluminium silicate,  $\text{KAlSi}_3\text{O}_8$ ), the micas, chlorites, amphiboles, and tourmaline. Another very important group of minerals is the oxides, which include iron oxides (haematite, limonite), tin oxides (cassiterite), and silicon oxide (quartz). Many metallic ore-minerals are sulphides, for instance galena (lead sulphide), sphalerite (zinc sulphide); and many copper ore-minerals are complex sulphides and sulph-arsenides.

Minerals therefore fall into groups composed of native elements, oxides, sulphides, sulphosalts, oxygen salts such as the carbonates, silicates, chromates, salts of organic acids, and hydrocarbon compounds (natural oils):

An important chemical property of minerals is the phenomena of isomorphism and isomorphous substitution. Certain minerals have analogous chemical composition, e.g. the carbonates, calcite ( $\text{CaCO}_3$ ), magnesite ( $\text{MgCO}_3$ ), and siderite ( $\text{FeCO}_3$ ); these minerals possess similar crystalline form, and may form intermediate compounds, e.g. dolomite ( $\text{CaCO}_3\cdot\text{MgCO}_3$ ). Such a group of minerals is called an isomorphous series. Far more common is isomorphous substitution, where minor amounts of an element partially replace an essential constituent by virtue of a similarity of atomic size; an example of this is the small cadmium content of many sphalerites (zinc sulphide).

Although a chemical analysis is desirable, many minerals, especially the ore-minerals, can be determined by qualitative blow-pipe tests. The necessary equipment can be carried in the field and the various reactions, such as heating on a charcoal block, with and without fluxes, are often diagnostic. Another useful technique is spectrographic examination. This method is very rapid for qualitative determination and has the advantage of indicating the major constituents and also elements which are present only as traces. Unfortunately, certain elements such as fluorine and sulphur do not give a positive reaction, and others often prove difficult. For large amounts of any particular constituent, quantitative spectrography is not so accurate as chemical analysis: spectrography, however, is the best analytical technique for trace elements.

## MINERALOGY: SCIENCE OF MINERALS

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*A general article explaining how minerals are studied and classified.*

*Fuller descriptions of particular aspects of the subject will be found under, e.g., Crystallography; Isomorphism; Metallography; Mohs Scale; and under the various minerals*

The earth's crust and certain extra-terrestrial bodies known as meteorites are composed chiefly of different kinds of minerals, these being substances which individually have a definite or a restricted range of chemical composition and atomic structure, and, given favourable conditions, assume a characteristic crystalline form. The study, description, and classification of minerals constitute the science of mineralogy, which is, therefore, a branch of natural history, and incorporates the application of several other sciences—e.g. chemistry, physics, crystallography, geology and petrology, geography, and economic geology.

A mineral must be distinguished from a rock (*q.v.*) which is a mineral aggregate, such as coal, limestone, granite, slate. A pure natural oil and native quicksilver, however, are minerals as they possess a definite chemical composition and atomic structure. Exceptionally, the constituents of a mineral may occur in an uncrystalline or amorphous state (e.g. certain ochres), and the material is then classed as a mineral; on the other hand, natural glass, obsidian, is a rock because it contains the constituents of several mineral species, although these have not yet crystallised out.

Minerals have been of interest to man since the Stone and Bronze ages, but it was not until the end of the 18th century that the systematic study of minerals was put on a scientific basis, by Romé de l'Isle and R. J. Haüy. The precise study of crystalline form was made possible by Wollaston's invention, 1809, of the goniometer for measuring the angles between crystal faces, and many major inconsis-

tencies were cleared up by Mitscherlich's exposition of isomorphism in minerals, 1820. The vast amount of systematic descriptive mineralogy was classified by J. D. Dana and C. Hintze, whose texts remain standard works.

Mineralogy is not only a classificatory science, but has immense philosophical, social, and economic value. The occurrence and distribution of minerals containing useful metals have a fundamental bearing on ways of life and international relations; the presence of uranium-bearing minerals may be mentioned as a striking, though relatively minor, consideration in this connexion. Furthermore, the evidence of mineral occurrences and interpretations of their origin have had an important effect on the trend of theories concerning the natural history of the earth.

It is important to distinguish between those characteristics of a mineral species which are (a) essential and diagnostic, such as chemical composition and atomic structure, which determine the crystalline form, optical, electrical, and crystallo-physical (cleavage, etc.) properties, and specific gravity; and (b) those features which are not essential or necessarily consistent, such as colour, lustre, hardness, form and structure of aggregates, and occurrence.

Although chemical composition is a fundamental characteristic of a mineral species, the atomic structure, or the way in which the constituent atoms are arranged, is of equal importance. A few native elements occur as minerals, e.g. native iron, gold, copper, silver, bismuth, arsenic, but many minerals are salts of various acids, and include sulphates, phosphates,



**Mineralogy.** 1. Marcasite, showing internal radial structure. 2. Hopper-shaped crystals of salt. 3. Haematite, with nodular exterior and crystalline internal structure. 4. Dendritic pyrolusite. 5. Olivine crystal. 6. Pyrite. 7. Octahedral crystals of magnetite in schist. 8. Crystals of fluorspar. 9. Quartz crystals.

*From specimens in the Science Museum and in the Museum of Practical Geology*

Much useful information has been gained by the synthesis of minerals in the laboratory and, in recent years, by investigating the behaviour of simple chemical systems under high temperature-pressure conditions.

The nature of the atoms constituting a mineral determines its chemical composition, but the way in which these atoms are grouped together (the atomic structure) is the fundamental physical property determining many diagnostic features, such as cleavage and crystal form. The atoms of a mineral are arranged on a definite geometrical pattern in space and are held rigidly together by bonds of force. Any particular mineral can be visualised as being made up of a series of identical bricks, each composed of a certain number of atoms arranged in a similar specific manner. This brick is the smallest unit of the whole pattern or atomic structure which, when repeated in three dimensions, builds up the crystal lattice, and it is known as the unit cell. The unit cells are simple geometrical forms such as cubes, face-centred cubes, hexagonal prisms. There will be a series

of planes through any crystal lattice which will cut similar atoms at regular intervals, thus accounting for certain planar properties of crystals such as the regular crystal faces and twin planes.

Many minerals when struck break along sets of parallel planes. This phenomenon is known as cleavage and is also intimately connected with the bonding forces in the crystal lattice. The specific gravity of a mineral is a function of the atomic weight of the constituent atoms, and the closeness of their packing in the lattice. The phenomenon of polymorphism is directly dependent on the lattice. For example, andalusite, sillimanite, and kyanite have identical chemical composition, but the very

different properties of these three minerals are the result of different atomic structure. Isomorphism occurs because certain minerals of analogous composition have similar atomic structures and therefore similar properties. Isomorphous replacement occurs when one element replaces another without undue distortion of the lattice on account of a similarity in atomic size of the elements involved.

A crystal lattice can diffract X-rays. With special apparatus it is possible to take a photograph of the diffracted rays which have impinged on a mineral. The plate is seen to consist of a characteristic grouping of lines or spots, and can often be used to determine the structure of the mineral. X-ray analysis is one of the most useful specialised techniques in determinative mineralogy.

The hardness of a mineral is often a diagnostic property and can be easily estimated by comparison with a set of standard minerals.

### Optical Properties

The optical properties of transparent minerals is of first rate importance to the mineralogist, who, with the aid of a petrological

microscope, can determine such properties as refractive index, birefringence, and dispersion. These features are intimately related to the symmetry of the crystal lattice structure, and the property of a large group of minerals, of splitting up a ray of light into two refracted rays (double refraction). Minerals which possess this property are termed anisotropic; those which do not are isotropic. The anisotropic minerals are further subdivided according to the way the two refracted rays behave.

An important optical property of a mineral is its refractive indices: isotropic (cubic) minerals have only one value for the refractive index; uniaxial minerals have two (hexagonal and tetragonal symmetry), and biaxial minerals have three (orthorhombic, monoclinic, and triclinic symmetry). The refractive indices can be measured by comparison with liquids of known refractive index, using the immersion method or directly by other methods.

These optical properties are determined by microscopic examination of crushed grains or in thin section under ordinary or polarized light transmitted through the mineral. The mineral must, therefore, be non-opaque; but many minerals, especially ore-minerals, are opaque. These may be studied microscopically by using a metallographical microscope.

### Mineral Occurrence

Minerals can be classified according to the type of rock in which they occur. The characteristic minerals of true igneous rocks are quartz, feldspar, feldspathoid, mica, olivine, pyroxene, amphibole, and iron ores. The nature of the mineral assemblage determines the igneous rock-type, *e.g.* lime feldspar, pyroxene, and/or amphibole signifies a basic rock; the presence of quartz, soda, or potash feldspar with mica indicates an acid rock. The minerals characteristic of the late stages of consolidation include the ore-minerals found in veins, for instance tin-ores, with acid rocks. Rocks formed by accumulations of organic material give rise to limestones, siliceous deposits, phosphates, and coals. Metamorphic rocks, formed from pre-existing rocks, often include new minerals, *e.g.* andalusite, kyanite, staurolite, may be formed in metamorphosed slates; mica, chlorite, garnet, in schists and gneisses.

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**Mineral Waters.** Term applied to water containing saline ingredients and often carbon dioxide gas. It mostly refers to natural waters which are used in the treatment of disease, either internally or in the form of baths. Some waters, such as Apollinaris and Perrier, are only slightly impregnated with saline matter, and are on that account especially adapted for use as table waters. Comparatively free from iron, they can be mixed with whisky without discoloration. The term is also applied to aerated waters.

There are many well-known mineral waters containing sodium sulphate (Glauber's salt) and magnesium sulphate (Epsom salt) in sufficient quantity to make them useful saline aperients. This class of water has been successfully prepared artificially in Great Britain.

A number of natural mineral waters contain iron salts and are known as chalybeate. Examples are Flitwick, Beds; Harrogate; Llandrindod; Bussang (France); Spa (Belgium); Tunbridge Wells. Barium occurs in Llangammarch water; bromine and iodine in water at Woodhall, Lincs; lithium in Baden-Baden water. Other waters, e.g. at Bath, are radioactive and give off argon, helium, niton, krypton, and xenon gases. The water at Bath is an example of thermal mineral water, the temperature being 88°-120° F. Droitwich water contains about 2,712 grains of sodium chloride (common salt) per pint, and is used at a temperature of from 98° to 101° F. for muscular rheumatism and sciatica. Sulphur dioxide and benzoic acid may legally be added as preservatives. See Aerated Waters; Spa.

**Minerva** (Lat., from the same root as *mens*, mind). In classical mythology, the Italian goddess whom the Romans identified with

the Greek Athena. One of the chief Roman deities, she was worshipped in the temple on the Capitol. She was the goddess of wisdom and the patroness of all arts and crafts. After her identification with Athena she became the goddess of war, and spoils were often dedicated to her. A festival was held in her honour at Rome from March 19 to 23. See Athena.

**Minervino Murge.** Walled town of Italy, in the prov. of Bari. It is 28 m. by rly. S.S.W. of Barletta, and produces fruit, vegetables, and olive oil. There are quarries near by.

**Mines, ROYAL SCHOOL OF.** London teaching institution, founded as the Government School of Mines and of Science applied to the Arts after the Great Exhibition of 1851. By 1863 the more general courses were omitted in favour of mining, metallurgy, and geology, and the name was changed. The original buildings were in Jernyn Street, but by

1880 all departments had been transferred to premises at S. Kensington now known as the Huxley Building. When the Imperial College of Science (*q.v.*) was established as a school of the university of London in 1907, the R.S.M. became one of the three supporting colleges. In 1913 its new building in Prince Consort Road was completed and occupied. The school grants associateships in mining metallurgy, mining geology, and oil technology; since 1925 the examinations for them have become also the final examinations for B.Sc. degrees at London in those subjects.

**Minesweeper.** Vessel designed or adapted for the removal of sea mines. In the First Great War, the Royal Navy successfully used trawlers for minesweeping, supplemented in due course by a small flotilla of obsolete torpedo gunboats, whose higher speed gave them some advantage over the trawlers. By the date of the armistice, Nov. 11, 1918, flotillas formed to deal with mines comprised 110 naval vessels, mostly built during the war; 52 hired

paddle steamers; 412 fishing trawlers; 142 drifters; and 10 shallow-draught craft of special design. In four and a half years of war 214 British minesweepers were lost. Other warships sunk by mines numbered 46, plus 225 auxiliaries.

Vessels used for minesweeping during the Second Great War included those of the British Algerine design, approaching 1,000 tons displacement, with a speed of 16.5 knots; the smaller Bangor type, laid down at the outbreak of war, under 700 tons with a speed of 16 knots; and the type built in the U.S.A. under Lease-Lend displacing nearly 900 tons with a speed of 17.5 knots. All these were rated as fleet minesweepers. For inshore work there were wooden motor minesweepers, British types of which numbered two, of 250 and 360 tons respectively: both had a maximum speed of 10 knots. They were especially useful in dealing with magnetic mines. Corresponding craft of U.S. design and construction displaced a trifle over 200 tons, with a speed of 13 knots. Typical trawlers of Admiralty design used for minesweeping were of 560 tons, with a speed of 12 knots. These vessels departed considerably from the hull form used in the fishing trawler, and were in effect a minor form of warship. In clearing the Thames estuary of magnetic mines, wooden motor launches specially equipped did excellent work.

**Minette.** In geology, name of an igneous rock of the lamprophyre group (*q.v.*). It is rich in biotite mica, orthoclase feldspar, and calcite. The term is also used in an entirely different sense for the iron ores of Jurassic age occurring in Lorraine, etc. See Iron.

**Mineworkers, NATIONAL UNION OF.** British trade union of coal mine workers. The first national miners' organization in the U.K. was the Miners' Association of Great Britain and Ireland, membership c. 100,000, which lasted 1841-48. In 1888 the Miners' Federation of Great Britain, membership 36,000, was established by miners' associations of Yorks, Lancs, and Cheshire, the Midlands, Fife, and S. Wales. The National Union, representing Durham and Northumberland, came in only in 1908, making federation membership c. 600,000. With the admission of workers other than coal face workers, membership rose by 1920 to c. 900,000. The name Mineworkers' Federation of



Minerva. Antique statue in the Vatican Palace, Rome



Great Britain was adopted in 1934, and from Jan. 1, 1945, the district unions affiliated to the federation amalgamated into one union, the National Union of Mineworkers.

Important events in the history of the federation were the strike of July-Nov., 1893, against a reduction of wages, which failed, but secured virtual recognition of a minimum wage; the strike of 1912 to secure a national minimum of 5s. a day for a man, and 2s. for a boy, which ended with an Act for setting up district minima; participation in the Sankey commission, 1919, which recommended nationalisation of the mines; the strike of 1921, the settlement of which did not provide the national wage demanded, but made wages a first charge on the industry; the dispute of May-Oct., 1926, which involved the General Strike (*q.v.*).

Nationalisation of the mines in 1947, though fulfilling the miners' wishes, disappointed them in that they had less say in management than they had hoped for. The local disputes that followed had, however, no backing from the union. *See* Coal; Mining; Sankey.

**Minex.** A general purpose coal-mining explosive. It contains as explosive ingredients 8 to 11 p.c. nitroglycerine and 61 to 64 p.c. ammonium nitrate. If sodium chloride (12.5 to 14.5 p.c.) is added it functions so as to lower the temperature of explosion and to increase safety in the presence of firedamp and coal dust.

**Minghetti, MARCO** (1818-86). Italian statesman. Born at Bologna, Sept. 8, 1818, he was educated at the



Marco Minghetti,  
Italian statesman

university there. In 1846 he started a newspaper, *Il Felsineo*, which brought him such reputation that in 1848 Pius IX made him minister of public works. Espousing the cause of Italian unity, he joined the army of Charles Albert, distinguishing himself at the battle of Custoza, 1848. A friend of Cavour, he became secretary-general to the ministry of foreign affairs 1859, and from 1863 to 1864 was prime minister. Ambassador to London, 1868, and to Vienna, 1870-73, he was again prime minister from 1873 to 1876. Died at Rome, Dec. 10, 1886.

**Minho** or **Miño** (anc. *Minius*). River of N.W. Spain and N. Portugal. Rising in the N. highlands of

the prov. of Lugo, it flows through it and S.W. through Orense. It then divides Pontevedra from Intre Doura Minho in Portugal, falling into the Atlantic Ocean, S. of Guardia and N. of Caminha, after a course of 173 m. The area of its drainage basin is est. at 157,000 sq. m. It is navigable by small vessels for 25 m., to Salvatierra in Galicia. Its estuary is wide, but is impeded by a sand bar. The Sil is its chief tributary.

**Miniature.** Although the word miniature has come to connote size, i.e. portraits small enough to be held in the hand, it was derived from *minium*, the Latin word for the red lead used in illuminated MSS. for the delineation of illustrations in small size. These were doubtless at times cut out and framed separately.

Probably the French miniatures attributed to Clouet were actually cut out from MSS. Certainly at first miniatures were painted on vellum, parchment, or chicken skin, stretched upon cardboard, usually on a portion of a playing card. Thence the idea was adopted of painting actually upon cardboard and, in the 17th century, on ivory. Miniatures have also been painted on copper or silver, slate, lapis lazuli, and marble.

The greatest exponents of the art have been Englishmen, but it received ready acceptance on the Continent, and some of the best painters in the 18th century were Frenchmen or Swedes. Some of the finest miniatures were executed by Holbein (1497-1543). Following him came Nicholas Hilliard (1537-1619) and his followers and the two Olivers, Isaac (d. 1617) and Peter (d. 1647). Their works are marked by extreme attention to detail, simple technique, a striking absence of shadows, the presence, as a rule, of a bright blue background, and a masterly skill in representing costume and coiffure. Colour schemes improved as time went on, Peter Oliver using in many instances a rose-coloured curtain, or some such drapery. The Olivers were followed by Hoskins (d. 1665), a man of greater ability, who, not entirely neglecting the blue background, introduced glowing colour schemes, and painted miniatures greater in importance than his predecessors had done.

He was succeeded by Samuel Cooper (1609-72), who excelled all who had gone before, and whose work in dignity, breadth, and ability has never been equalled. The constantly repeated Walpole phrase to the effect that

a miniature by Cooper is like a life-sized Van Dyck seen through the small end of a telescope is by no means lacking in truth. Cooper's small portraits are perfect reproductions of character, painted with marvellous truth, keen insight, and striking ability. They are life-like representations, subtle delineations of complex character. His brother Alexander (d. 1660), who worked in Sweden, Denmark, and Holland, was not so great. Lawrence Crosse (d. 1724) was a marvellous painter of lace, and an interesting group of men, who should receive attention, were members of the Lens family (18th century), half a dozen of whom were able miniature painters.

#### Working on Ivory

The second great period of English miniature painting is that of the 18th century. The introduction of ivory had given fresh possibilities to the art, and revealed the chance of brilliant execution, luminous quality, and all the charm that the new material, coupled with facility of brushwork, could originate. At the head of the school stands Richard Cosway (1740-1821), a man who had no equal although many imitators, an exquisite colourist, possessed of just the right ability to flatter, coupled with the skill of representing in a few easy strokes the superficialities of the faces he had to represent.

More serious in his intention, and also more solid in his execution, was George Engleheart (1752-1829), a man of prodigious industry and extraordinary accomplishment. Of quite another sort was John Smart (1741-1811), a profound student of the human face, a draughtsman of exquisite ability and rigid perfection, but a lover of quieter and more Quakerlike colour schemes.

At another angle stand the two Plimers, notably Andrew (1763-1837), remarkable for their brilliant portraits, somewhat monotonous, and often meretricious, but vivid, palpitating, attractive. Those of lesser importance were Meyer (1735-89), Ozias Humphry (1742-1810), Shelley (d. 1808), Edridge (1769-1821), Wood (1768-1809), Scouler (d. 1810), and Grimaldi (1751-1830); and around them were the numerous miniature painters of the 18th century, whose work crowded the Royal Academy of the day. Among these were many such as Hill (c. 1770-91), Bogle (c. 1769-1803), Vaslet (*fl.* 1775), who at times could paint a minia-

ture with such extraordinary skill that the object became a *tour de force*; but these occasional portraits were like meteors, flashing across the artistic sky, and their usual productions were on a far lower level, although almost invariably artistic productions.

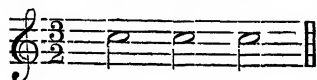
The 19th century saw the degeneration of miniature painting, although the works of Newton (1785-1869), Ross (1794-1860), Thorburn (d. 1885), and others are worthy of attention, but costume and coiffure were not favourable, and the period could not be termed an artistic one. In France miniature painting has had great exponents, although one of the greatest French miniature painters, Hall (1739-93), was a Swede rather than a Frenchman. French miniature art, however, attained its zenith when Isabey (1767-1855) and Augustin (1759-1832) were working. In enamel no one has ever equalled Petitot (1607-91), while Prieur (d. 1677) comes very close to him.

A number of skilful miniature painters have kept the art alive in the 20th century. The best-known are Marjorie Forbes, Bertha Fowle, May B. Lee, S. A. Lindsey, Ephraim Strellett, Norah H. Taylor, and Alyn Williams. *Consult History of Miniature Art*, J. L. Propert, 1887; *Handbook of Portrait Miniatures*, 1897; *Chats on Old Miniatures*, Foster, 1908.

**Minicoy.** One of the Laccadive Islands, Indian Ocean. It is an isolated coral atoll between the main Laccadive and the Andaman islands, and is joined with the S. group of the Laccadives to the administrative district of Malabar.

**Minim.** Smallest practical unit of liquid measurement in apothecaries' or wine measure. It is equal to one drop. There are 60 minims to one fluid drachm, 480 to a fluid ounce, and 9,600 to one pint. The minim is denoted by the symbol m.

**Minim.** Musical note consisting of an open oval head with a stem, *p*. Its time-value is one half of a semibreve (*o*) or two crotchets (*q*). It is sometimes a pulse note, especially in Church music, and its symbol in the time signature is 2. Thus  $\frac{3}{2}$  means three minims in a bar. See Time.



**Minimum Wage.** Term used to denote the sum below which the wage paid to an employee must not fall. Such a minimum

wage may be the idea of a social investigator and writer, or a condition of an agreement between a trade union and a body of employers. It may even be laid down by a wage-fixing committee established by statute, and thus be legally enforceable. It is then termed the statutory minimum wage. The idea of the minimum wage developed during the second half of the nineteenth century, partly through the growth of trade unionism and partly through the growth of the public conscience. So long ago as 1891 the British parliament passed a "fair wages" resolution, requiring government departments to see that fair wages were paid for all work done under government contracts. A much stronger resolution was passed in 1909, and a fair wages committee was appointed to devise means to carry it out. The principle of the fair wages resolution, at first applied only to government contracts, has since been widely incorporated in in-

dustrial legislation, including that relating to sugar, transport, cinematograph films, etc. In 1909 the Trade Boards Act was passed. This empowered the minister of Labour to constitute trade boards, whose main duty is to fix minimum rates of wages in industries where "no adequate machinery exists for the effective regulation of wages throughout the trade." This power was considerably extended in 1918. Trade boards now exist for more than 50 trades.

Agreements between employers' associations and trade unions normally provide for minimum rates of wages on a time basis even where piece rates are usually paid, and sometimes provide also for a guaranteed minimum weekly wage. In 1924 parliament adopted a resolution approving the principle of a universal minimum wage. The I.L.O. in 1928 adopted a convention recommending throughout the world the creation of minimum wage-fixing machinery in under-paid trades. See Sweated Labour.

## MINING: THEORY AND PRACTICE

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*Methods of choosing mining sites and of the establishing of mines, are here described. A special section of this article is devoted to coal mining. See also Geology; Metallurgy; Mineral Dressing, etc., and under minerals, Coal; Copper; Diamond; Gold, etc.*

Improved technique in geological exploration, including the use of electrical, magnetic, and mechanical methods to probe deep into the solid rock, have eliminated much guesswork from mine prospecting. Mining is always concerned with a wasting asset, and the better it is carried through in a given case the more worthless in a particular material will be the area exploited when mining ceases there. Most minefields in Great Britain have been known from ancient times, and the history of some still actively at work goes back into pre-Christian times.

It has been suggested that the Napoleonic soldier had some 50 lb. of metal behind his fighting effort, the fighter of the First Great War a few tons, and the fighter in the Second over 50 tons. Similar increase in demand has grown in civilian life. To meet it, engineers have learned how to control tremendous rock pressures, so that some mines work to a depth of two miles, or reach far under the sea. Water, which usually defeated earlier miners at fairly shallow depth, is either sealed back or handled by giant pumping systems. In place of slave labour, electricity, compressed air, gelig-

nite, and the internal combustion engine, combined with the precise skill of delicately applied chemical engineering processes, are used to break huge tonnages of rock and strip them of their useful metals.

The products of mining include engineering and precious metals, industrial and precious gems, fluorspar, barytes, sulphur, cement rock, the raw materials of some plastics, dyes and pharmaceuticals, oil and brine from deep bores, and even magnesium from sea-water. Ancillary mining processes may be important: a firm in western Canada, threatened with litigation over its sulphureous smelter fume, took to importing phosphate ore and, by chemical treatment involving the conversion of its smelter gas to sulphuric acid, produced a phosphate manure urgently needed by the agricultural community.

In the politico-economic field the mining and subsequent movement of precious metals and gemstones, notably gold, has been a vital factor in international trade. In industry a rôle no less significant has long been played by coal, and more recently, by oil.

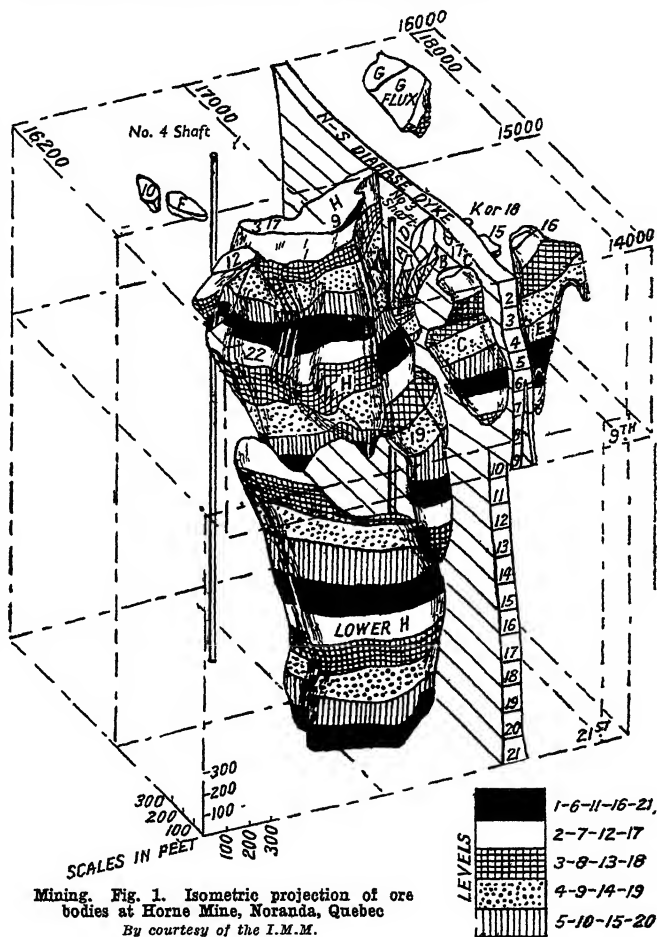
The location, development, and exploitation of an ore deposit is

carried through in a series of well-defined stages. Economically exploitable minerals are limited, broadly speaking, to well-defined geological zones. One of the best methods of obtaining an accurate picture of the general geology of a region is by air photographic survey, which is comparatively swift and cheap, and yields invaluable topographic information and indication of geological bedding, faulting, and folding, by the skilled use of which it is possible to decide on the most likely places for examination on the ground. Magnetometric records of the variation in concentration of Maxwellian lines of force, which alter in response to the stratification and mineralisation of the upper layers of the earth's crust, can also be made from the air. Such surveys have been made by low-flying helicopter off the coast of the U.S.A. to locate potential oilfields under the sea. In addition to intensive search for mineralised outcrops by direct observation and the use of pick and pan, scientific geophysical techniques are used to chart deeply buried rock formations. In one such method a rectangular grid is roughly surveyed over a chosen area, and a special kind of radio set is carried over the grid, where it measures at a series of stations the reception of a signal from a small high-frequency dynamo at an external point. The distortions of the signal thus recorded indicate corresponding changes in the rock strata, and build up a three-dimensional picture extending in suitable cases some hundreds of feet in depth. In another method a small explosive charge is fired and the time taken for the seismic disturbance to travel to a number of selected points yields information with regard to the rocks which have transmitted its waves. In yet a third method a delicate torsion balance is used to weigh the earth's crust from point to point. Thus the existence of a large deposit of, say, ironstone, among lighter country rock is detected by its distorting effect on the local gravitational field.

Observation, combined with the use of any geophysical method suited to the terrain, having been used to its effective limit, physical entry to the deposit for the purpose of securing ore-samples becomes necessary. This may be achieved by sinking prospecting shafts which follow the ore, or by probing with diamond drills. In oil-well work, drilling has been pushed to depths

exceeding two miles. It is feasible to reach to considerable distances at any slope with the smaller tool used for hard-rock prospecting, but as the hole costs money to make and can rarely be utilised afterwards, long-range work is kept to a minimum, and when done is as

body consisted of large and rotund masses of mineralised rock. The shape of the ore-body was accurately mapped before mining started, and a system devised suited to the job, and justified by the value in the ore which the drilling had proved to exist.



Mining. Fig. 1. Isometric projection of ore bodies at Horne Mine, Noranda, Quebec  
By courtesy of the I.M.M.

far as possible vertical. An alloy-steel tube armed with diamond on its cutting edge is pressed into the rock, and rotated so as to cut a cylinder of the material through which it travels. These "cores" show the geological nature, direction, and mineralisation of the strata, and the drill-holes are accurately surveyed by the use of small cameras which take photographs of a plumbline and a compass at a given depth and thus allow the operator to correct any drift of his drill-hole. An example of the use of drilling was in the development of the Noranda mine (Fig. 1) in Quebec. Here the ore

More usually a lode or (Australian) reef is to be mined. This is characteristically a fairly narrow stratum of valuable ore traversing, vertically or steeply, enclosing walls of country rock, usually barren or too poor in value to be worth mining. Where the lode is of plutonic origin, or has resulted from deposition in a fissure of molten rock or by natural transporting agencies such as superheated underground gases or liquids, the outcrop may reach the surface and there betray its presence to the searching prospector. Characteristically the uppermost zone will be leached by the

penetration of rain and flood-water so that its minerals may be either altered or washed down and redeposited in the zone of secondary enrichment below, in which the mineralogical character of the values is frequently complex. Below the secondary zone comes the true original lodestuff, unimproved by any mineral transported from the surface. This continues till the mine "bottoms out" or "faults out" through cosmic movements which have cut off the mineralising streams from the original fissure or weakness-plane.

Of a different type are the banket (Du., a kind of pastry with almond paste enclosed in it) reefs of the Witwatersrand. These were originally bedded deposits, laid down in conformity with the alluvial stratification of remote geological times, though the manner in which their gold was introduced remains conjectural. In these reefs large quartz pebbles are embedded in a quartzite matrix in the manner of the almond paste in banket—hence their name. Such deposits are far more predictable in their behaviour and, though subject to strata-displacements by faulting, show less local variation of value than a lode.

#### Types of Shaft

When sufficient work has been done, either by drilling or entry through shafts and adits (horizontal tunnels above the drainage level), to justify a costly scheme of development, entry for miners, timber, and machines must be provided and travelling ways to enable them to reach the working faces, or stopes. These ways, in the case of a steep lode, are usually shafts; they may be vertical, so as to cross the lode at a pre-determined depth, or incline, when they are usually sunk parallel to the slope of the lode and a short distance beneath it, on its foot wall side. At least two shafts are necessary as not only must there be secondary access in case of need (fire could destroy a shaft), but one of the shafts is required as the downcast, providing fresh air to the working places, while the other, the upcast, draws the foul and dust-laden air out, with the assistance of mine fans. The two shafts are inter-connected by planned ventilation "districts."

Mining engineers make considered arrangements for the control of the mine air at all stages. As the mine deepens, the temperature rises so that in the deepest mines, such as those of Wit-

watersrand, working conditions would be intolerable were care not taken. Dry and refrigerated air is pumped down in seriously hot mines, while the expansion of compressed air from the working tools and the evaporation of water from sprays, used to wet down dangerous dust, also help to cool the atmosphere. As it is important to avoid saturation of this hot air with water-vapour, psychrometric surveys are systematically made and a definite minimum approach of wet-bulb to dry-bulb thermometer readings maintained by the ventilation engineers. The amount of ore-dust floating in the air is measured by sampling and kept below a figure dangerous to the miners' lungs by dilution with fresh air, the use of electrostatic precipitators.

#### Cross-cuts and Levels

The development roads are called cross-cuts when they take the shortest horizontal path from the country rock to the lode, levels when they run along, or parallel to, the lode. Such tunnels slope slightly downwards to allow mine water to drain toward the gathering points from which the multi-stage centrifugal mine pumps lift it to the surface. This same slope downward aids the loaded trams or trucks (of ore) or tubs (of coal) on their way to the underground loading stations. In driving the tunnels compressed-air percussive drills, working at about 80-lb. pressure, are used. In a tunnel or "drift" they are heavy tools, mounted on stretcher bars. A "round" of holes is drilled during each working shift, to a pattern which has been evolved after testing. It is so arranged that when the resulting holes are charged with blasting gelignite and fired in the proper sequence, a "cut" is first blasted out centrally, followed by "easers" and "trimmers," the last of which carry forward the drift at its proper cross section and perhaps drop the severed rock into an easy position for gathering. After a delay during which water is finely sprayed on to the blasted rock to wet down dust, and the foul air is withdrawn by ducted fans, the "muckers" clear the broken rock into trucks and remove it. This work is often mechanised by the use of a compact power-shovel mounted on a truck which gathers the rock in front of it and loads it into empty trucks behind, compressed air providing motive power.

A series of these development drives is made at intervals down

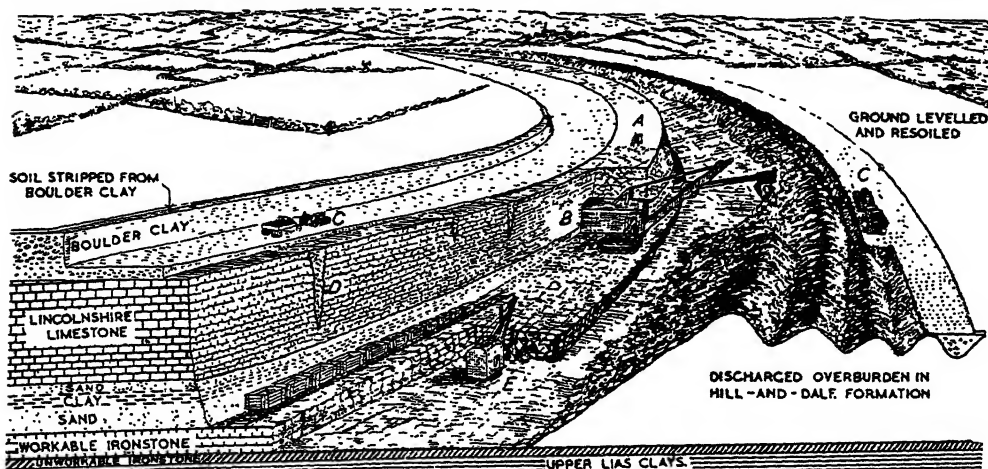
the lode (say 100 ft. apart). The ore thus opened above and below is next blocked out by "raises" or "winzes"—small internal shafts at regular intervals which cut the valuable ore body into 100 ft. squares. Samples are now cut by chipping an even groove across the exposed sides of the lode at regular intervals of, say, 5 ft., and the results are marked on an assay plan. This allows the consulting engineers to classify the blocks of ore into proved, probable, or non-profitable ore, and to plan accordingly. In Great Britain and elsewhere, public interests are protected by bodies such as the Inst. of Mining and Metallurgy, which lays down conditions that must be satisfied before they certify the known ore reserves of a given property.

By this time the final pattern of exploitation is taking shape. Roads and rlys. are being built, surface works including houses and an ore-treatment plant are going up, the general unwritten rule being that only unavoidable development expenditure shall be done until several years of proved ore reserves have been completely blocked out.

#### Examination of Ores

A certain amount of ore has been shipped to mineral dressing laboratories for thorough testing and the working out of an extraction process. This is needed because the percentage of valuable mineral in ore as mined is usually small—perhaps one to two p.c. in a copper ore, or as little as one part in a million in a gold ore. Some of the elements used in nuclear physics have no recognized minimum percentage to justify extraction. In the laboratory the extraction metallurgist uses X-rays, spectrography, microscopy, and a variety of physical and chemical tests to identify the minerals comprising the ore-complex, and to work out a suitable means of concentrating them. This is perhaps followed by a "pilot-plant" test in which some tons of mine ore are subjected to the proposed treatment, partly to ensure that no complications have been overlooked and partly to ascertain process costs and to train personnel. The plant in its final form will include equipment for mineral dressing.

Development is succeeded by exploitation. The manner in which the rock is removed, and the method of supporting the working place thus opened, depend on the shape and extent of the ore body. The problem set is one of structural engineering. As ore is taken,



A. Drilling blast-holes for shattering limestone in advance of the power shovel. B. Stripping overburden. C. Tractor-drawn scraper removing boulder clay overburden in excess of the capacity of the power shovel, and depositing it in the

dales, thus levelling the hill-and-dale formed by the power shovel. D. Cavities in the Lincolnshire limestone filled with boulder clay. E. Rock-navvy loading into wagons running on tracks laid along the top of the bared ironstone

**Mining. Fig. 2.** Diagram illustrating the development of an open-pit mine

*Drawn by Dr. W. David Evans, by courtesy of the I.M.M.*

the unsupported ceiling transfers its weight to the untouched surrounding walls which must now take the weight of an arched dome of valueless country rock. At great depths and with large stopes pressure may also cause the floor to heave, or rise, and if the pressure is not relieved the rock sustaining it bursts, perhaps with tragic and certainly with economically undesirable results. Where preliminary work has shown the shape of the ore body, a suitable extraction scheme obviates such an occurrence.

In "top slicing," layer after layer of ore is dropped downward through the main ore body while the roof of the work is allowed to cave down on to a timber mat as ore is withdrawn from below. In "shrinkage" stoping, block after block is severed and only enough ore is removed to equate the natural expansion due to breakage-voids, so that the severed ore provides its own support until the workers are safely away, after which it is run out from below. This method can be used only with steep lodes between firm walls. Various methods of achieving the same effect—temporary safety followed by reasonably clean extraction—are described in mining textbooks as overhand, underhand, breast, and rill stoping. In another technique massive deposits are tackled from below and work is progressively carried up, the space thus created being perhaps filled with waste from the surface.

An intermediate type of operation is "glory-hole" mining in which the workings are open to the sky, but the severed rock is funnelled down to a receiving shaft underground and then withdrawn by level to a shaft in the untouched country rock beyond the disturbed working zone. The diamond "blue ground" mine at Kimberley started in this way; but as the diggings deepened the problem of maintaining a safe slope on the side walls became insuperable, and work then went underground.

Open-pit mining accounts for most of the tin production from alluvial workings in Malaya and Nigeria. Where the size of the deposit warrants large-scale operation, bucket dredges are used. These consist of a continuous chain of buckets supported in a framework on a double pontoon which can be manoeuvred in its "pad-dock," or pond of water, by means of winches working head ropes and side ropes in conjunction with anchorages on land. The dredge excavates a series of swinging arcs or straight cuts forward, lifting the overburden and running it astern so as to carry its pond forward with it. When the pay-gravel is reached, it is washed into jigs or over sluices which trap the cassiterite and reject the gravel. Smaller deposits are worked by means of gravel-pumps, ground sluices, or, where conditions permit, with draglines or power shovels. A substantial percentage of the world's tin has been won

by individuals using only a pick, a shovel, and a calabash or pan.

Some of the largest mines in the world are working huge low-grade deposits of copper disseminated through porphyritic gangue. At Morenci, New Mexico, 53,000 tons of low-grade copper-ore are blasted daily; more than 100,000 tons of rock are treated daily at Bingham, Utah.

A typical open-pit mine is developed as a series of benches (Fig. 2), the uppermost ones working into the overburden and removing it, while succeeding benches handle pay-ore. The bench is drilled at intervals, and periodically blasted. Power shovels then load the severed rock into ore-trucks, either on rails or motor-powered, and take it to the crushing and concentrating plant.

**COAL MINING.** By 1800 the importance of coal to iron was fully realized in Great Britain, and the annual output of British coal, chiefly from Tyneside, had risen to 10,000,000 tons, all shallow-mined coal, the problem of dealing with underground water still proving difficult although Newcomen's first steam engine had gone into action in Staffs in 1712. Gunpowder was applied to shaft-sinking in 1770 and, following Pickard's invention of crank motion in 1780, Watt's double-acting engine (1782) and his rotary engine (1784) came into being. These gave improved efficiency and allowed shaft-winding to be mechanised, thus greatly facilitating the raising of the coal to the surface. In 1789 serfdom

was abolished in the Scottish mines. Coal gas was adapted to commercial lighting in 1798. In 1815, Davy invented the safety lamp, which substantially reduced accidents in "gassy" mines.

The 1830s saw the beginning of mining trade unions. The mechanical fan was invented and used to reduce explosions from firedamp, and cage winding was introduced. Wire rope came in in 1841, underground compressed air in 1850, and the first mines inspectors were appointed in 1850 under a new Act. The coal cutting machine was invented in 1866 and electric power was taken down the mine in 1882. Mechanisation of work in mines, indeed, owes much to British pioneer work, and comparison between the British 71 p.c. mechanisation in 1938 and that of the U.S.A. with its much higher output per man-shift ignores the fact that in Great Britain a hundred years of exploitation have exhausted the thicker seams, so that by the 1940s most British coal came from beds which Americans would hesitate to develop. In the legislative field, British landmarks were the Truck Act of 1896, the raising of the age limit to 13 in 1900 for underground employment, and the Eight Hours Act of 1908. The Coal Nationalisation Act of 1946 led to the vesting of the British industry under the national coal board on Jan. 1, 1947.

#### Working a Coal Deposit

Coal deposits are usually fairly flat, and to work them two main underground attacks are used. In one, "pillar and bord" or "room and pillar," the seam is blocked out by drives into rectangles. The coal from the drives is raised and the pillars sustain the working roof. They are then "robbed" to a safe limit, the increasing weight of rock above helping in their severance. With this method the cost of timber support is low, but coal may be left behind. A more usual method is "longwall" mining. "Retreating longwall" is used when drives from the shaft go to the farthest boundary to be worked, and the coal is then extracted along a continuous long wall close to which the miners are protected by pit-props which can be "robbed out," as the working face advances, leaving the roof to settle on to any waste filling packed back into it. "Advancing longwall" works outward from a pillar of untouched coal which is always left round the shaft to protect it from subsidence, which

might upset the smooth running of the shaft gear or endanger life. The coal is cut and loaded mechanically wherever width of seam allows and is transported either by continuous conveyor systems, rope haulage pulling the tubs, actuated by pit ponies (in obsolescent cases), or by electric, compressed-air, or Diesel locos. At the shaft coal is raised in tubs or dumped into "skips," i.e. boxes holding some tons of material and so arranged that at the pithead they automatically turn upside down and discharge their load down to surface hoppers.

Open-cast coal mines were developed in Great Britain during the Second Great War. The extent of the coal deposit is estimated by means of drills, and calorific value of the coal is found by sampling a few shallow pits. Access roads are put in and the agricultural top soil is stripped off and stacked. The overburden is removed by scrapers and bulldozers, perhaps aided by power shovels and draglines. The exposed coal seam is then picked up by excavating machines, loaded into lorries, and dispatched. When the seam has been exhausted the site is restored, its drainage is relaid, and the topsoil is reinstated. In the U.S.A. huge stripping shovels, unsuited to conditions in Britain, handle open-cast coal very cheaply. Open-cast coal is more liable to spontaneous combustion than the denser and less porous fuel from deep mines, and precautions must be taken in its storage.

Intermediate between underground collieries and open-cast coal mines are the drift mines which exploit shallow seams. Access to these is usually gained by a short incline, up and down which "rakes" of tubs are drawn.

Coal is no longer mined only by hand. Cutting machines, mechanical loaders, etc., do not discriminate between it and the shales and clays from floor, roof, and parting seams. Coal is fairly light (density 1.3 to 1.5) while the associated impurities including massive pyrite are heavier. With coal coarser than "slack" sizes—say down to between  $\frac{1}{2}$ " and  $\frac{1}{4}$ "—it is easy to use this difference in weight to separate the light from the heavy matter in jigs or special sluices, or in heavy-liquid suspensions. Below such sizes the problem of draining away the water used in such separating processes becomes increasingly difficult. Fine sizes retain over 20 p.c. of their weight of moisture even after centrifugal

drying, and this would add seriously to both the transport cost and to the user's difficulty in his combustion of washed "fines." Such small sizes are sometimes shaken dry over cloth-topped tables through which stratifying currents of air are blown to remove high-ash impurities without introducing moisture. Consult *Underground Practice in Mining*, B. Beringer, 1928; *Mining Engineers' Handbook*, R. Peele, 3rd ed. 1942.

**Mining and Metallurgy**, Institution of. British institution, founded 1892, and incorporated by royal charter in 1915. It devotes attention to both the practical side of mining and research work. At the monthly meetings from Oct. to May technical papers are read, and afterwards published in *Transactions*. The institution also issues to members a monthly bulletin. Its offices are at 225, City Road, E.C.1.

**Minion**. In printing, a type one size larger than nonpareil and one size smaller than brevier. Also known as 7-point, it runs to about 10 lines to an inch in depth. In French it is called *mignonne*; in Italian, *mignone*; in Spanish, *miñona*; in German and Dutch, *colonel*. The type called emerald in Britain, and in size between nonpareil and minion, is known in the U.S.A. as *minionette*.

**Minister**. Latin word meaning originally a servant. It is now used chiefly in two senses: (1) Members of the government are called ministers and collectively the ministry, because they are in theory the king's servants. The head of the government is the prime, or first, minister, and in the 20th century Great Britain adopted the custom, in existence in France, Canada, Australia, and other countries, of making the word the official title of the heads of certain departments, e.g. the minister of Health. A minister without portfolio was the designation of a member of the government who had no departmental duties. During both Great Wars such ministers were appointed to assist the prime minister. Ministers without portfolio were also appointed to do special duties at other times. Similar in usage is the term minister of state, used during the Second Great War to designate members of the government serving at strategic points overseas, e.g. N. Africa. Later a minister of state (Hector McNeil) was appointed to assist the secretary of state for Foreign Affairs, who was expected to be out



of London at various important conferences after the end of the war. The term minister is also used for representatives of their country in foreign capitals where the status of ambassador has not been accorded, e.g. the British minister at Sofia. (2) Men ordained for service in the churches of the Nonconformist bodies are known usually as ministers, or ministers of religion. The Church of England prefers the form clergyman. See Clergy; Prime Minister.

**Ministry** (Lat. *minister*, servant). Word used in two main senses: in religion for the whole body of clergymen or ministers of a religious body and their work, e.g. the ministry of the Church of England; and in politics for the body of ministers of the crown, both cabinet ministers and those outside the cabinet. In 1948 the ministries of the crown (as distinct from secretariats of state) were the following: Agriculture and Fisheries, Civil Aviation, Defence, Education, Food, Fuel and Power, Health, Labour and National Service, National Insurance, Pensions, Supply, Town and Country Planning, Transport, and Works. In this sense the word was used in the 18th century by Swift, Wilkes, and

and it has recently been followed in Great Britain, where almost all the new departments of state are known as ministries. The board of Education, for example, was renamed the ministry of Education in 1945. In France the word is also used for the building in which the ministry is housed. For separate ministries, see Health, etc.

**Minium** OR RED LEAD. The name given to a scarlet crystalline compound of lead. It is chiefly lead orthoplumbate,  $2\text{PbO} \cdot \text{PbO}_2$ , and is made by heating massicot in a reverberatory furnace. Minium when itself heated changes to violet and then black, but becomes scarlet again on cooling. Ignited, it is converted into lead monoxide. It is used in the preparation of flint glass and as a paint. See Lead; Miniature.

**Mink.** Name given to three closely related species of carnivorous mammals, also called vison, belonging to the weasel (*Mustela*) genus. They resemble polecats in general form, and have soft glossy fur and a bushy tail. In colour they range from yellowish to chocolate brown, and the chin is white. They are always found near water, and feed mainly on frogs and freshwater mussels, but also catch birds and small mammals. All have a particularly penetrating and disgusting odour.

The European mink is found in Poland, Finland, and in most parts of Russia; the Siberian species occurs in the districts E. of the Yenesei river; and the American

mink is widely distributed in N. America. The fur is highly valued, especially that of Alaskan specimens, and incessant trapping has made the animals scarce.

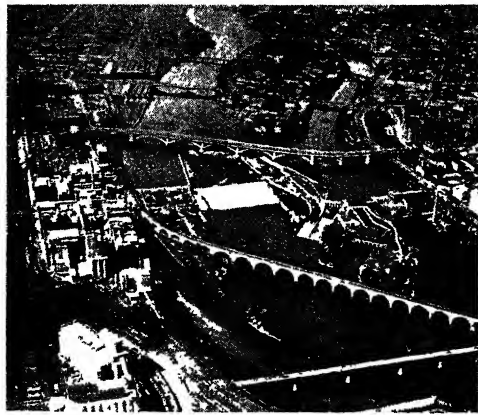
**Minneapolis.** City of Minnesota, U.S.A., the co. seat of Hennepin co. The largest city of the state, it stands on the Mississippi river at the Falls of St. Anthony, adjacent to St. Paul, and is served by the Chicago, Milwaukee and St. Paul, and other rlys. The city is pleasantly situated in a lake district which attracts many visitors. Among its buildings are two cathedrals, the university of Minnesota, and the Minneapolis



Mink. Specimen of the European species, *Putorius lutreola*

school of fine arts. The Institute of Arts has subscriptions of over \$5,000,000. The Minnehaha Park covers nearly 3,800 acres, and contains the falls familiarised by Longfellow's Hiawatha.

National pre-eminence in the wheat and flour trade began in 1880, and since 1900 one mill alone has had a capacity of 14,000 barrels of flour daily. Power for its factories is provided by the Falls of St. Anthony. A system of dams and locks, begun in 1915, have greatly increased the supply. The site of Minneapolis was visited in 1680 by Father Hennepin, who gave the Falls of St. Anthony their



others, and this use has spread from Gt. Britain to all the self-governing parts of the Empire, and to many foreign countries.

Later the word was used in another, although cognate, sense. When the various parts of the Empire obtained responsible government they, being without the historic names such as exchequer, treasury, etc., began to call their departments of state ministries. This use prevails in Canada, Australia, and elsewhere. A similar use has prevailed in France since the establishment of the Republic.



Minneapolis, Minnesota. View of the business district. On the left is the Medical Arts building, next to it the Foshay obelisk, and on the extreme right the Northwestern Bell Telephone building. Above, left, a view showing the complicated network of bridges over the Mississippi

name. Settlement began about 1847, and in 1856 Minneapolis was incorporated as a town. It became a city 11 years later, and in 1872 St. Anthony, first settled in 1837, was incorporated with it. Pop. 492,370.

**Minnesinger** (Ger. *minne*, love). German lyric poets who flourished for about 200 years from the middle of the 12th century. The earliest minnesinger developed the native lyric, associated with dancing, but about 1200 the influence of the Provençal troubadours modified the art. Like them, mainly of knightly or noble birth, the minnesinger formed a school of artificial and courtly lyric, with complicated metrical forms, but they differed from the troubadours in their more reverent, semi-religious treatment of love. Many were poets of nature, and some were political and social satirists. They composed the musical accompaniment to their own songs. Most of them were Swabians, or S. Germans. Among the most notable minnesinger—nearly 200 poets are recorded as belonging to the period—are Heinrich von Veldeke, Heinrich von Morungen, Wolfram von Eschenbach, Heinrich von Ofterdingen, Walther von der Vogelweide, Hartmann von Aue, and Neidhart von Reuenthal. The minnesinger were succeeded by the meistersinger (*q.v.*). There have been several collections of the works of the minnesinger in German; especially notable is one in five volumes by F. H. von der Hagen, 1838–56. *See* Troubadour.

**Minnesota.** River of Minnesota, U.S.A. Issuing from Big Stone Lake, on the South Dakota border, it flows for 450 m. first S.E. to Mankato and then N.E. to the Mississippi river, at Minneapolis, below St. Anthony's Falls. At high tide small vessels may ascend it for 295 m., and for steamers it is navigable for 45 m.

**Minnesota.** A northern state of U.S.A. lying to the W. of Lake Superior. The surface, mainly undulating, is marked by some 11,000 large and small lakes, including Red Lake (345 sq. m.) and Lake Itasca, from which the Mississippi river takes its rise. Other rivers include the Minnesota, Red, and St. Croix, all navigable, and utilised to supply water-power. Chiefly an agricultural state, Minnesota yields great quantities of maize, corn, and oats; the world's largest flour mills are at Minneapolis. Dairying and meat-packing are important industries, and mineral

wealth is considerable, red haematite, granite, and limestone being worked. St. Paul, the capital, and Minneapolis, the largest city, are the chief centres. The Mesabi iron range is the world's greatest iron ore district, and with the Vermilion and Cuyuna iron ranges lies in the forested heights W. of Lake Superior. Wealth from these areas reached its peak after the First Great War, and special taxation of the mining companies, fixed locally, resulted in the erection of many fine schools. The chief educational institution is the university of Minnesota at Minneapolis. The state is chiefly populated by those of foreign extraction. The small farmers and industrial workers united to form the Farmer-Labour party, which captured all but two of the state offices, and the entire Minnesota delegation to congress in 1936. This movement subsided with the approach of America's entry into the Second Great War.

Minnesota was admitted to the Union in 1858. Its area is 84,068 sq. m. Pop. 2,792,300.

**Minnow** (*Leuciscus phoxinus*). Small fresh-water fish, common in the rivers of Great Britain and of most parts of Europe. It belongs to the same genus as the roach and dace, and is distinguished from them by the broken line which runs along each side of the body. It varies in length from three to six inches, and is largely used as bait in angling for larger species.

**Minoan.** Name given to the pre-Hellenic civilization of Crete, also called (together with that of Mycenae) Aegean. *See* Aegean Civilization; Crete.

**Minor.** In law, a person under 21 years of age. In English law the term infant is used in this sense. In Scotland a child is a pupil up to 14 (boy) or 12 (girl), then a minor up to 21. *See* Infant.

**Minor** (Lat., smaller). In music, a term applied to those intervals of the 2nd, 3rd, 6th, and 7th which are less by a semitone than the corresponding major intervals. As commonly used in connexion with scales and keys, both major and minor in their signification are obviously absurd; they are merely brief and convenient ways of referring to the scale or key with the larger or smaller 3rd and 6th which dif-

ferentiate the one from the other, and replace the older expression, "In the key of C with the greater (or lesser) third."

**Minorca** (Sp. *Menorca*). Second largest of the Balearic Isles in the Mediterranean, belonging to Spain. So called from its being smaller than Majorca, the largest island in the group, it is 25 m. to the N.E. of the latter. It is 35 m. in length, with an average width of 10 m. and an area of about 290 sq. m. The coast is indented and rocky, and the surface hilly; the highest point, near the centre, rises to 1,206 ft. Cereals, wine, oil, oranges, lemons, figs, almonds, and flax are grown; iron, copper, lead, slate, marble, alabaster, etc., mined. Cattle and horses are reared. A good road, built by the British when they were in occupation in the 18th cent., runs from Ciudadela to Port Mahon. The island is rich in stalactite caves, megalithic remains and ancient towers (talayotes), and other sepulchral monuments. Minorca, which had been in government hands since the beginning of the Spanish Civil War, surrendered to Gen. Franco on Feb. 9, 1939, the act of capitulation being signed on board the



Minnow. Small fresh-water fish common in British rivers

British cruiser Devonshire, which provided the only neutral place available for the negotiations. The Devonshire evacuated a number of Republicans, and while leaving the port was unsuccessfully attacked by Italian aircraft operating from the Nationalist base on Majorca. Pop. 45,700. *See* Balearic Isles.

**Minorca Fowl.** Breed of domestic poultry supposed to have originated in the island whose name they bear. In reality they appear to be merely a red-faced variety of the white-faced Black Spanish breed, from which they differ also in the shorter and stouter body, shorter shanks, and larger combs. Though champion layers of large eggs, they cannot be prevailed upon to sit. *See* Fowl, colour plate.

**Minories, THE.** London thoroughfare. It runs S. from Aldgate High Street to Tower Hill, E.C., and derived its name from the abbey of the Minoreesses of S. Mary of the order of S. Clare. On the abbey site was built the old parish church of Holy Trinity, rebuilt in 1706, and dismantled in 1899, when the parish was united with

that of S. Botolph, Aldgate. In a vault S. of the altar in 1851 was discovered, in tannin, the head, since preserved at S. Botolph's, supposed to be that of Edmund de la Pole, duke of Suffolk, executed 1513, or of the father of Lady Jane Grey, Henry Grey, duke of Suffolk, executed 1554. Between the 16th and 18th centuries a centre of the gunsmith trade, the Minorities became a Jewish quarter. The thoroughfare figures in Defoe's *Journal of the Plague* and in Dickens's novel, *Domby and Son*. *Pron.* Minnoriz.

**Minor Interval.** In music, an interval containing one semitone less than a major interval of the same degree. Thus, C-E, a major 3rd, contains 4 semitones, while C-E flat, minor 3rd, contains 3 semitones. The minor triad is the sounding together of a note, its minor 3rd, and its perfect 5th, e.g. C-E flat-G.

**Minorites.** Name adopted by the early Franciscan friars as an indication that they wished to be regarded as less than the other religious orders. The female branch of the order, founded by S. Clare about 1212, adopted the name of Minorettes. They are now commonly known as Poor Clares, but the old name still survives in the Minorities, London, where they had a convent. *See* Franciscans; Poor Clares.

**Minorities.** A political and ethnological term much used after the First Great War. It generally describes numerically inferior sections of the people embraced by one community, usually a state, and their specific legal claims. Though long existing, this problem was raised to the level of international legislation by the assertion of the right of self-determination for each distinct people, proclaimed during the First Great War, and by a number of articles in the Paris peace treaties. Thus were established certain rights for minorities, racial, linguistic, or religious. The League of Nations, entrusted with the supervision of these obligations, as well as a number of others undertaken in special treaties, e.g. between Germany and Poland, Austria and Czechoslovakia, Sweden and Finland, Greece and Turkey, Greece and Bulgaria, etc., had a special commission of its Council to deal with this problem.

In fact, with the exception of Portugal, Norway, and possibly Holland, all European countries had and have minorities; they

exceed 10 p.c. of the total population in France (Alsations of German language, Basques, Bretons, Flemings, Italians), Greece (Macedonians, Bulgars, Jews, Turks), Yugoslavia (Hungarians, Germans, Macedonians, Albanians, Turks), Poland in 1939 (Ukrainians, Germans, Jews, Ruthenians), Rumania (Hungarians, Germans, Jews, Ukrainians, Bulgars, Poles), Spain (Catalans, Basques, French, Gipsies). Czechoslovakia and Hungary solved their minorities problem summarily after the Second Great War by expulsion, as, also, to some extent, did Yugoslavia and Poland.

Historically, the struggle for minority rights started in the early 19th cent. with such conflicts as those of the Macedonians against the three states embracing them, the Finns, Poles, and Balts against Russia, and the Slavonic peoples in the Hapsburg monarchy against Austrian or Hungarian domination. From the linguistic point of view Great Britain has a minority with special claims in the Welsh movement.

A congress of nationalities, first established at Geneva in 1925 and representing about 30 different groups from several European nations, endeavoured to develop and assimilate the minority rights so far granted. The dictatorships used the minorities as means of irredentist agitation, e.g. Italians in Nice, Corsica, and Savoy, and Germans in Sudetenland, Danzig, and Memel, while oppressing the minorities within their own borders. The United Nations charter, while not expressly mentioning them, contains provisions evidently meant for the reinforcement of minority rights.

**Minor Planets.** A group of planetary bodies numbering over 2,000, the orbits of which lie between those of the planets Mars

and Jupiter, for the most part nearer to Mars. *See* Asteroids.

**Minos.** In Greek legend, king and lawgiver of Crete. He was the son of Zeus by Europa, brother of Rhadamanthus, and father of Deucalion, Ariadne, and Phaedra. His wife was Pasiphaë, daughter of Helios, who brought forth the Minotaur, which was slain by Theseus. When Daedalus fled from Crete, Minos pursued him to Sicily, where he was killed by Cocalus.

The foregoing, which is the version of the legend in the ordinary accounts, represents Minos as a monster of cruelty. Other accounts represent him as an able monarch, who made Crete a great maritime power, cleared the seas of pirates, and by wise legislation promoted the welfare of his subjects. After death Minos was made one of the judges of the dead in Hades. Recent archaeological discoveries throw remarkable light on the legend. The labyrinth, i.e. house of the double axe, which, like the bull, was the object of a cult at Cnossus, is probably the great palace there, with its intricate passages. A wall-painting of the Minoan age represents a bull tossing boys and girls. Both Athens and Sicily came under Minoan influence. *See* Aegean Civilization; Daedalus; Theseus. *Pron.* Mynoss.

**Minot, GEORGE RICHARDS** (b. 1885). American physician. Born Dec. 2, 1885, at Boston, Mass., he graduated at Harvard in 1908, and worked at the Massachusetts general hospital, 1915-23. In 1928 he was made professor of medicine at Harvard and director of its medical laboratory. There, with W. P. Murphy and G. H. Whipple, Minot found and developed the liver treatment for pernicious anaemia. It brought them the Nobel prize for medicine in 1934 and to Minot a year earlier the Moxon medal of the R.C.P., London. From 1926, when these experiments first became known, innumerable cases of pernicious anaemia were successfully treated with raw liver and compounds. Minot published *On Blood and its Disorders, and Dietary Deficiency*.

**Minotaur.** In Greek mythology, a monster with the head of a bull and the body of a man. It was the offspring of Pasiphaë, wife of Minos, king of Crete, and a bull sent to Minos from Poseidon the sea-god. The monster was kept in a labyrinth constructed by Daedalus (q.v.), and a yearly tribute of seven youths and seven maidens from Athens was given it to devour. Theseus however, came



Minotaur. Sculpture representing Theseus slaying the Minotaur, by G. Ramey  
Louvre, Paris

with one contingent of youths and maidens, and with the help of Ariadne slew the monster and found his way through the labyrinth. See Ariadne; Theseus.

**Minsk.** Capital city of White Russia S.S.R., and the headquarters of a region named after it. Minsk stands on the Svisloch, a tributary of the Beresina, and is a junction for rlys. from Poland to the R.S.F.S.R. and from Lithuania to Ukraine. It is about 300 m. N.E. of Warsaw and 270 m. N.N.W. of Kiev. There is a university, and normally a trade in flax, hemp, corn, timber, and leather. With recorded history from the 11th century, Minsk has been held by Lithuanians, Poles, Tartars, and Swedes; was destroyed by Napoleon in 1812; fought over by Bolsheviks and Poles in 1920; and seized by German troops, June 30, 1941, to be liberated by units of the White Russian Front, July 3, 1944. Pop., pre-war, 238,772.

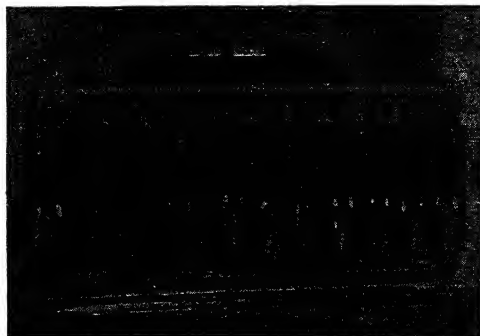
**Minster** (Lat. *monasterium*, monastery). Term originally applied to a church to which a monastic fraternity was attached, as at Sherborne, Wimborne, and Beverley minsters. Now it is more loosely used for the principal church or the cathedral of a city, e.g. York Minster. The corresponding German term Münster is employed for cathedrals in the Protestant cities of Switzerland and the Rhineland. See Cathedral.

**Minster** OR **MINSTER-IN-SHEPPEY.** Village of Kent, England. It is on the island of Sheppey, 3½ m. S.E. of Sheerness, with which it is connected by a light rly. S. Mary's church, part Saxon, is a fine building. Of a convent here in the Middle Ages there are some few remains. Oysters are cultivated, and Minster is visited by pleasure seekers. Pop. 3,782.

**Minster** OR **MINSTER-IN-THANET.** Village of Kent, England. It is 4 m. W. of Ramsgate, with a rly. station. S. Mary's church has beautiful Norman and E.E. work, the nave, tower, and miserere stalls being notable. About 700 a monastery was founded here, and later another was dedicated to SS. Peter and Paul. Both were destroyed by the Danes, and the present church is the successor of the one belonging to the older monastery. Population 3,198.

**Minster Lovell.** Parish of Oxfordshire, England, on the river Windrush, between Witney and Akeman Street. The ruined moated manor house is said to

have been built by William, 11th Baron Lovel, and there is a legend that his descendant, Francis, 13th baron and 1st Viscount Lovel, a Yorkist, died of starvation in a secret chamber while hiding after



Minstrels' Gallery in the nave of Exeter Cathedral, an example of 15th century work

the battle of Stoke in 1487. A skeleton, believed to be his, was found in a walled-up room in 1708. The manor house was bought in 1946 by the duke of Norfolk. The 15th century Perpendicular church was once a cell to the French abbey of Ivry. It contains interesting monuments and brasses and was restored about 1865.

**Minstrel** (old Fr. *menestrel*, one who ministers). Singer or performer on a musical instrument, or both, in the Middle Ages. Corresponding with the Anglo-Saxon scop or gleeman, of whom Widsith (*q.v.*) was a type, the minstrel proper, or jongleur, came to England at the Norman conquest. Minstrels were at first executants rather than poets, though they might be both. Frequently a company of minstrels attended on a troubadour to render his work. Their popularity may be gauged from the frequency with which they were depicted in manuscripts, and by the minstrels' gallery (*v.i.*).

Minstrels were largely the retainers of noble families, and those unattached were welcome guests at the houses of the rich wherever they wandered. The decline of chivalry, the spread of printing, and probably also the rise of the drama, combined to bring about the decline of the minstrel, and he drifted into one of the wandering classes treated as vagabonds and beggars in the time of Elizabeth. In the remote parts of the country the minstrel lingered on for some time, and Scott in *The Lay of the Last Minstrel* shows his minstrel singing of Border chivalry as late as the reign of William III. Consult English Wayfaring Life in the

Middle Ages, J. J. Jusserand, Eng. trans., 1891; History of English Poetry, Courthope, 1895-1910.

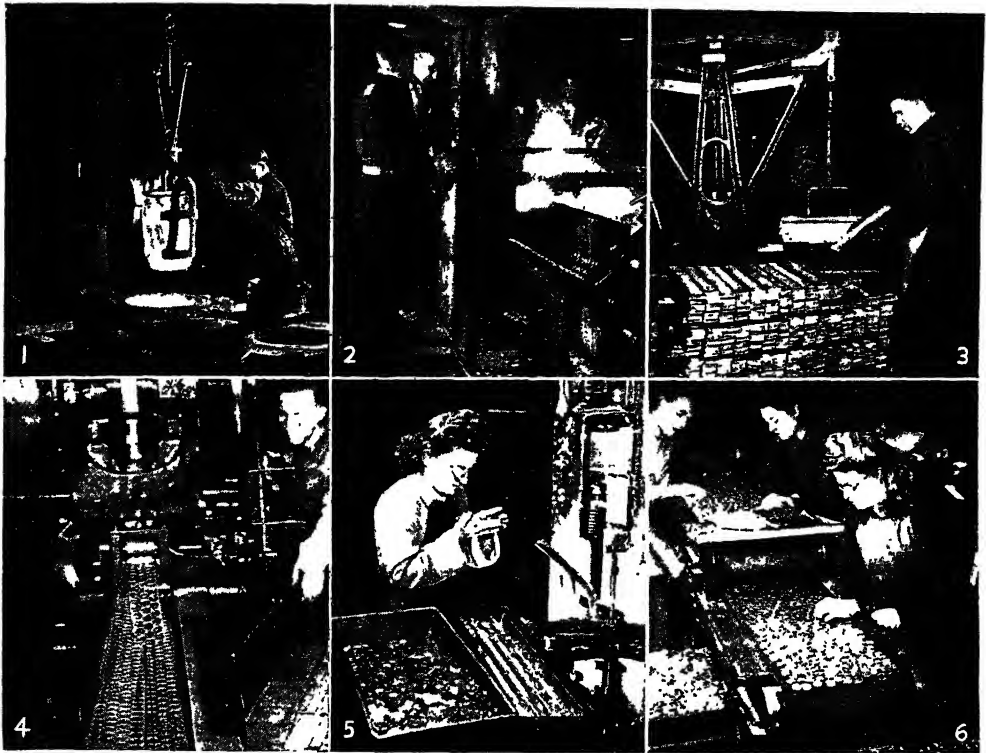
**Minstrels' Gallery.** In the medieval mansion, a gallery or balcony (*q.v.*) projecting into the hall (*q.v.*), for the use of the professional minstrels attached to the household. Underneath was usually a passage, screened off, and communicating with the kitchen and buttery. The gallery was a common feature of Plantagenet and Tudor halls, and good examples remain at Oxford and Cambridge.

**Mint** (*Mentha*). Genus of perennial herbs of the family Labiatae, widely distributed outside the tropics. They have creeping rootstocks, square stems and branches, pungent aromatic leaves, and purplish flowers in whorls. Ten species are recognized as natives of Great Britain, of which the most important are peppermint (*M. piperita*), yielding the essential oil of the same name (*q.v.*); pennyroyal (*M. pulegium*); spearmint or lamb-mint (*M. spicata*), grown in gardens for making mint-sauce, and yielding oil of spearmint. Menthol is obtained from *M. arvensis*. A supply of green leaves may be obtained through the winter by maintaining the plants in a temp. of 60°F.



Mint. Flowers and leaves of water mint

**Mint** (Lat. *moneta*). Government office where money is coined. The British mint dates from Anglo-Saxon times, when mints were scattered all over the country. Gradually their number was reduced, until early in the 18th century all coins for the three kingdoms were minted in London. The present building of the Mint on Tower Hill was erected in 1810. From 1851, when complete control was taken over by the government, to 1870 the master of the mint was a permanent officer, discharging his duties in person. By the coin-



Mint. Processes of coining silver in the Royal Mint. 1. Crane carrying a glowing crucible of molten metal to the mould. 2. Pouring molten silver into the bar moulds. 3. Silver-coinage bars being weighed after leaving the mould. 4. Punching machine which produces plain metal disks. 5. Coin-press operator: at this machine disks are turned into coins. 6. Finished coins passing along an endless belt, closely scrutinised by examiners

age Act of 1870, the mastership of the mint was vested in the office of chancellor of the exchequer, without emolument, all duties to be performed by a permanent head of the department under the title of deputy master. Earlier Sir Isaac Newton was master of the mint, and made much money by contracting for the supply of coins. There are branches in Australia at Melbourne and Perth.

The method of manufacturing gold and silver coin at the Royal Mint, London, is approximately as follows: The refined metal is melted in plumbago crucibles and poured into iron moulds. The bars thus formed are passed between cast-iron or steel rollers until they are of the requisite thickness, being kept soft by annealing. The weight of the flattened bars called "fillets" is tested on disks punched out of each fillet by the "tryer," who decides whether they are within the "remedy," i.e. the small margin within which coins in minting are permitted to vary from the standard weight.

After the trial disks have been passed the fillet is put through the

cutting machine, in which two steel cylinders, driven by an eccentric, punch out from the fillet disks known as blanks and force them into two holes in the bed of the machine, the fillet being pushed along automatically until all the blanks are cut out. The metal left over, known as scissel, is remelted. The blanks are then marked, i.e. the edges are thickened so as to form a rim, and the diameter reduced by being placed between a revolving steel plate and a fixed block. Formerly the edges were marked with an inscription. After being annealed, the blanks are washed in water and dried in sawdust, the oxide of copper deposited on the silver blanks being then removed with hot dilute sulphuric acid.

The blanks then go through the coining press, a modified form of the original Uhlhorn lever press. Each is placed on a fixed engraved die and subjected to pressure from another engraved die, being held meanwhile in a collar which produces the crenated (milled) or engraved edge—a precaution against clipping or filing. The

blanks, having received the necessary impressions from the dies and collar, are now coins. After being rung the finished coins are weighed on the automatic balance, a modification of that designed in 1843 by William Cotton, deputy governor of the Bank of England. Any too light or too heavy are remelted. Sample coins are collected in a pyx or box, and annually weighed and assayed by the Goldsmiths' Company—the test being known as the trial of the pyx. The crown alone has, through parliament, the prerogative of coinage. *See* Coinage; Numismatics.

**Minto, GILBERT ELLIOT, 1ST EARL OF (1751-1814).** British administrator. The eldest son of a baronet of Minto, Roxburghshire, he was born in Edinburgh, April 23, 1751, and educated at Fontainebleau, Edinburgh, and Oxford. He was called to the bar at Lincoln's Inn, 1774, and in



1st Earl of Minto, British administrator





Minton Ware. Vase, about 1860, from the Herbert Allen Collection  
Victoria and Albert Museum

1776 was returned to parliament for Morpeth. During 1777-84 he represented Roxburghshire. At first a Whig, he joined the opposition in 1782. He helped Burke in framing the case against Warren Hastings and Sir Elijah Impey. In 1790 he was returned M.P. for Helston, and was viceroy of Corsica, 1794-96, and governor of India, 1807-13. Created earl of Minto and Viscount Melgund in 1813, he died at Stevenage, June 21, 1814, and was buried in Westminster Abbey. *Consular Life and Letters*, 3 vols., 1874, edited by his great-niece, the countess of Minto.

**Minto**, GILBERT JOHN ELLIOT-MURRAY-KYNNYMOND, 4TH EARL OF (1847-1914). British administrator. Born July 9, 1847, son of the third earl, whom he succeeded in 1891, he was educated at Eton and Cambridge, and joined the Scots Guards in 1867, retiring in 1870.

He served with the Turkish army, 1877, and with the British in the Afghan War, 1879, was private secretary to Lord Roberts at Cape Colony in 1881, and was a volunteer in the Egyptian campaign, 1882. Military secretary to Lord Lansdowne, the governor-general of Canada, 1883-85, he was chief of the staff to the government forces in the rebellion of 1885. Minto was governor-general of Canada, 1898-1904, and during 1905-10 viceroy of India, where his contribution to history was made in the Morley-Minto reforms. He died March 4, 1914, and was succeeded in the peerage by his son,

Victor, Viscount Melgund (b. Feb. 12, 1891). A memoir by John Buchan appeared in 1924.

**Minton Ware**. Soft and hard paste porcelain were made at Stoke-upon-Trent. The Mintons were making semi-transparent china in 1790. In 1825 they reverted to a white-bodied earthenware, with printed design and a new borax glaze. After further experiments they produced both soft and hard paste porcelain, artistic in design and decoration. Parian ware was also made. The Mintons also introduced encaustic tiles in various styles, majolica, Palissy ware, and admirable della Robbia plaques and panels, all remarkable for the excellence of body, design, colouring, and the permanence of the non-poisonous glazes. *See* Pottery.

**Minucius Felix**, MARCUS. A Latin writer and Christian apologist. A lawyer, he practised in the Roman courts. His only known work is the *Octavius*, a dialogue between a Christian and a pagan, at the end of which the pagan announces himself converted. The Christianity expounded by Minucius is of broad type; apparently he wrote to influence the educated of his time, to whom he presents Christianity rather as a system of philosophy than as a religion. The author's nationality and the date of the *Octavius* are uncertain.

**Minuet** (Fr. *menuet*). Dance for two persons in three-four time. It originated in Poitou, and was developed from the courante (*q.v.*), being more ceremonious and stately than that dance. It was introduced into Paris in 1650, shortly became the most important dance of the court, and has ever since been regarded as the highest form of dancing. There were four variations upon the original dance, the one most used being *Le Menuet de la Cour*. As a musical composition the minuet occurs in suites of Bach and Handel, and in symphonies of Haydn and Mozart where it is the forerunner of the scherzo. *See* Dancing.

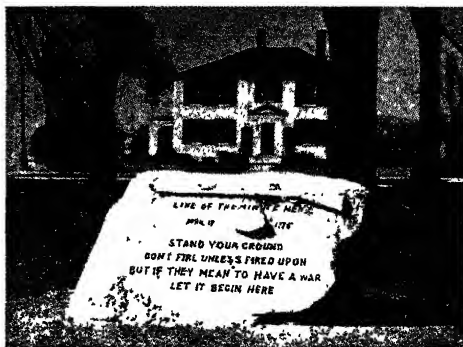
**Minuscule**. Term applied to the letters of the small cursive writing which the monks of the 7th-9th centuries developed out of the

previous uncial characters, which are larger and like modern capitals. From the minuscule script were evolved the modern small or lower case letters, called minuscules. *See* information under each letter of the alphabet.

**Minusinsk**. Town of Siberia. In Krasnoyarsk territory, R.S.F.S.R., it is 165 m. S.S.W. of Krasnoyarsk, on the Yenesei R. Terminus of a branch rly. from the Trans-Siberian main line, it is served by steamer. There are tallow boileries and tanneries, and trade in corn, cattle, and gold washings. The Minusinsk basin is a rich coal-yielding area.

**Minute**. In the measurement of time, the sixtieth part of an hour. Minute is also the term for the sixtieth part of a degree of a circle, *i.e.* a minute of an arc, and in architecture the sixtieth part of the diameter of the shaft of a classic column. The minute of arc and the minute of time both contain 60 seconds, and the usual abbreviation for the word is the mark '. *See* Degree; Hour; Time.

**Minute-Men**. Popular name given during the American War of Independence to the militia men who pledged themselves to take the field at a minute's notice. A



Minute-Men. Stone erected at Lexington, Mass., marking the line occupied by the minute-men at the first engagement in the War of Independence. It is inscribed with the words of their commanding officer, Captain J. Parker

bronze statue, The Minute Man, by a Concord sculptor, Daniel French, representing a farmer still at the plough, but grasping a flint-lock musket, stands at one end of the North Bridge at Concord, Mass., which was the first place on which the British marched. *See* Concord, Battle of; Lexington, Battle of.

**Minutes**. Business term for a summary of the proceedings of the meetings of a company, committee, or other body of persons acting in a joint capacity. The record is put down in a minute book by the secretary, and the custom is that



at every meeting the minutes of the last meeting are read before other business is proceeded with. If accepted as a correct account, the minutes are then signed and passed, and a continuous record of the transactions of the company or society is kept. By the Companies Acts, limited companies must keep minutes of their general meetings and of those of their board of directors. In the U.K. a Treasury minute is the name given to an official memorandum issued from the Treasury.

**Minya.** A province in Upper Egypt. With an area of 782 sq. m. and pop. 928,259, it takes its name from a town on the left bank of the Nile, 140 m. S. of Cairo. This town has 51,026 inhabitants. There are several variant spellings of the name.

**Minyans.** Primitive seafaring race of the Mycenaean age of Greece. They were established at Orchomenos, in the marshy basin of the Copais, and farther north at Iolcus, under Mt. Pelicon, whence Jason sailed for the Black Sea in quest of the Golden Fleece.

**Miocene** (Gr. *meiōn*, less; *kainos*, recent). In geology, the period between the Oligocene and Pliocene systems of the Cainozoic or Tertiary era. It probably occurred between 15 and 35 million years ago. There are no deposits of this age in Great Britain, but elsewhere in Europe and America they are important, particularly in Switzerland, where the Molasse deposits were derived from the erosion of the Alps as they were being uplifted and thrust northwards. The Miocene was a period of great earth movements; then came the major folding of the present-day European and Asiatic mountain ranges—Alps, Caucasus, Carpathians, Balkan and Dalmatian Mts., Himalayas. These movements being felt in England were recorded by the folding of the Wealden dome and the London and Hampshire basins. On the W. coast of America the Miocene was a period of intense volcanic activity.

The temperate climes were undoubtedly much warmer than at present, striking evidence being the formation of Miocene coal deposits in Greenland. The mastodon, dinotherium, rhinoceros, etc., were among the larger animals of the plains, and also an early ancestor of the horse, the three-toed protohippus, and hippotherium. The lower Miocene beds of Kenya have yielded fossil remains of primates, including the jaw (found in 1946) of the species *Proconsul*

which in some respects resembles a human jaw more closely than that of a modern ape, and may indicate that the common ancestor of man and the apes is to be found in Africa. See Horse; Pliocene.

**Mjøsen** or **Mjösen.** Largest lake of Norway. It is situated about 38 m. N. of Oslo, and extends about 60 m. in a N. direction. Its width varies from 2 m. to 10 m., and its maximum depth is 1,480 ft. The Lougen river flows into it, and it discharges into the Glommen by the Wormen. It contains a fertile island, 10 m. round.

**Miquel, JOHANNES VON** (1829–1901). German statesman. Of French descent, he was born at Neuenhaus, Hanover, Feb. 19, 1829, and studied law at Göttingen and Heidelberg. He was



J. von Miquel,  
German statesman

elected to the Hanover diet in 1864. He was on the governing body of the Diskontogesellschaft in Berlin, 1870–73, was a leading member of the National Liberal Party in the Prussian chamber of deputies, 1867–82, and entered the Reichstag in 1887. From 1890 to 1901 he was Prussian minister of finance, chosen by William II. In 1897 he was raised to the nobility and made vice-president of the Prussian ministry. Opposed by Bülow, he resigned office, and died at Frankfurt Sept. 8, 1901. *Prom. Mee-keel.*

**Miquelon, GREAT AND LITTLE.** Islands off the S. coast of Newfoundland, forming, with the St. Pierre group, an overseas territory of the French Union. The is. are connected by a strip of sand, 5½ m. long, and have an area of 83 sq. m. (with the St. Pierre group, 93 sq. m.). Barren and rocky, they support a declining cod-fishing industry. St. Pierre is the capital. Between 1713 and 1816 they were four times appropriated to England and as often restored to France. Adm. Muselier of the Free French landed on Dec. 24, 1941, dismissed the governor, a Vichy partisan, and announced the adherence of the group to the cause of Free France. Pop. 550.

**Mira.** In astronomy, the name given to the first known variable star. Discovered by David Fabricius, 1596, who announced it as a new star, it fluctuates in brightness from the second to the ninth magnitude during a period of about 332 days. Neither the maximum and

minimum brightness nor the period are constant, and the causes for the changes are unknown. Spectroscopic examination has established that the change is a physical one confined to the star itself and probably not due to the regular eclipse of a dark companion. The star is also known under the name Omicron Ceti. See Stars.

**Mirabeau, ANDRÉ BONIFACE LOUIS RIQUETI, VICOMTE DE** (1754–92). French politician. A

brother of the great Mirabeau (v.i.), he was born at Bignon, Nov. 30, 1754, and became an officer of dragoons. He served in the American War of Independence, became colonel of the regiment of Touraine, 1788, and was deputy for the noblesse of Limoges to the states-general in 1789. He was a vehement opponent of reform and of his brother's policy, and from his figure and hard-drinking habits was popularly known as Mirabeau-Tonneau (i.e. barrel). After his attempt to suppress an insurrection in his regiment at Perpignan, 1790, he was arrested, but on release joined the émigrés in the Rhineland. He died at Freiburg-im-Breisgau, Sept. 15, 1792.

**Mirabeau, GABRIEL HONORÉ RIQUETI, COMTE DE** (1749–91). French statesman. He was born March 9, 1749, at Bignon, either in Provence or near Nemours. In a stormy youth he distinguished himself as a reckless rebel against social and moral conventions. Ugly and pock-marked, he yet exercised irresistible fascination. Though married, he ran off with Mme. de Monnier, to Switzerland and Holland, where he worked as a literary hack. He was imprisoned in 1777 at Vincennes, where he wrote the licentious Letters to Sophie. When the Revolution broke out he was rejected by the nobility of Provence but returned by the people for both Aix and Marseilles. An aristocrat by birth, he sprang at once into the leadership of the third estate when the states-



Vicomte de Mirabeau,  
French politician



Comte de Mirabeau,  
French statesman  
After Couderc in  
Versailles Museum

general met on May 5. Under his leadership the third estate refused to allow itself to be adjourned. But there were few who could grasp the ideal for which Mirabeau was striving—a strong constitutional government, free alike from the incubus of aristocratic privileges as well as from the anarchy of uneducated democracy.

His efforts failed to break down the prejudices of the monarchists and to open the eyes of formal constitutionalists to the real situation, and caused him to lose popularity with what was rapidly becoming the party of reckless revolution. He could not win the confidence of the king and queen, who under his guidance might have directed reforms by which alone the revolution could have been averted. Of tremendous energy and practical skill, Mirabeau disputed with Danton the title of the greatest orator of his day, though secretaries wrote many of his speeches. But the strain of the gigantic task which almost unaided he had taken upon his own shoulders, was too great; and on April 2, 1791, he died. See French Revolution; National Assembly. *Pron.* Meerabo.

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**Mirabeau, VICTOR RIQUETI, MARQUIS DE (1715-89).** French economist. Of Provençal descent, he was born at Pertuis, Vaucluse, Oct. 5, 1715, and served in his youth as an officer in the army. From about 1743 he devoted his attention to economic



Marquis de Mirabeau,  
French economist

questioning, being a follower of Quesnay (*q.v.*), and notable among the so-called physiocratic school of economists. Among his publications were his popular *L'Ami des Hommes*, 1750-60; *Théorie de l'Impôt*, 1760, for which he suffered a short term of imprisonment; *Les Économiques*, 1769-72; and *La Science*, 1774. A man of extravagant tastes and fiery passions, the marquis was notorious for quarrels with his wife, Marie de Vassan, and with

his son Gabriel Honoré (*v.s.*). He died at Argenteuil, July 13, 1789.

**Mirabilis** or **MARVEL** OF PERU. Genus of perennial plants of the family Nyctaginaceae, natives of tropical America. The flowers are



Mirabilis. Foliage and flowers of this tropical American plant

yellow and red, sweet scented, and bloom from May till Oct. Readily raised from seed, and often treated as half-hardy annuals, they flourish best in light soil.

**Miracle** (Lat. *miraculum*, a marvel). Event transcending the known laws of nature. It is convenient to use the term, in a narrower sense, for all those actions of God which do not conform to the order of nature as it is known by scientific observation, experiment, and induction. Whether there is, or is not, such action, is a question of evidence; but here we are concerned only with defining a conception as exactly as language will allow.

A miracle is a supernatural act of God in this narrower sense of the term. God may be thought of as acting supernaturally, either in the soul of man, or in the world around. Although the word miracle is sometimes applied to such an inward experience as conversion, it is convenient to confine the term to an outward event. The miracle has been described by conservative theologians as an act of God contrary to the order of nature, a violation of natural laws, and an interference with natural forces.

But more theologians have been careful to explain that a miracle need not be contrary to the natural order, although inexplicable by that order in so far as we have knowledge of it. Some have maintained that it may be an occasional manifestation in that natural order of a vaster and greater order, which as a whole is at present inaccessible to our senses or our reason. The negative aspect of a miracle is that it is

inexplicable by our present knowledge of nature; and the positive aspect is that, owing to its close connexion with God's self-revelation in inspired persons, it is to be regarded as God's act, not contrary to, and yet not conformable with, that wider activity of God which theism recognizes in the whole order of nature.

Only a deistic conception of God's relation to nature, which places God not only above but even outside nature as a closed system, can exclude the possibility of miracle. A theistic conception which represents God as no less immanent than transcendent, no less in and through than above and beyond nature, may distinguish two modes of divine activity, and may describe them, in developing an analogy between God and man, as habitual and original. Just as a man may in most of the affairs of life and business follow a routine, and yet, when the occasion demands it, may show a fresh activity to meet a new emergency, so may God be conceived as acting generally in the fixed order of nature, but exceptionally departing from that order, not to disturb it, or destroy it, but to meet demands of His wisdom and goodness that it could not fully satisfy.

The analogy may take us a step farther. If a man is fulfilling a purpose for himself or others that falls beyond and above the ordinary occupations of his life, it may be necessary for him more frequently to depart from his usual habits. If God is fulfilling a purpose of self-revelation in truth and grace for the redemption of man from sin and its consequences in this world, it may be in like manner necessary that He should act in ways that do not conform to His ordinary working in nature. We should with reason suspect an alleged miracle that had no connexion with, and served no recognizable purpose of, God.

Further, as in putting right something in his own affairs or those of others which has gone seriously wrong, a man may be forced to act very differently from the way in which he would have acted otherwise, so sin with its consequences may be regarded as so serious a disturbance in God's world that very drastic measures for its removal may be necessary. A revelation of God which was intended to convey to man a more adequate knowledge of God than the world can supply, and a redemption of man which aimed at delivering man from sin as nature could not,

might altogether reasonably be expected to reach beyond nature's bounds in the means it used, and to draw more directly from the unexhausted resources of God. As belonging then to the divine revelation and human redemption in Christ, miracles become both intelligible and credible. Their possibility is certain, their necessity probable, and we can approach the question of their actuality without any hostile bias.

Against Hume's contention that a miracle *per se* is so incredible that we must regard all evidence in favour of miracles as untrustworthy, we may set the considerations which have just been offered. His bold assertion "it is contrary to experience that a miracle should be true," is an irrelevant truism, if what he means is experience generally, as the very conception of miracle assumes that miracle is not an ordinary event, and it is a reckless begging of the question if he means *all* experience without any exception, since even Mill admits that there is "a certain amount of positive evidence in favour of miracles." His demand that the testimony should "be of such a kind that its falsehood would be more miraculous than the fact which it endeavours to establish," may be met by insisting that it is less improbable that miracles should occur than that the Christian religion should rest on the shifting sand of credulous superstition, and that the Gospel records should be a tissue of falsehood.

#### O.T. and N.T. Miracles

About the miracles recorded in the O.T. Christian faith is not first of all, or most of all, concerned. If the miracles of Jesus are not adequately attested, the evidence in the O.T. will still less bear close scrutiny. If the miracles of Jesus are intelligible and credible, the O.T. records can be examined without any prejudice. Harnack in his book *What is Christianity?* seeks against an extreme scepticism to defend the trustworthiness of the Gospels by admitting the healing ministry of Jesus, and accounting for the cures regarded as miraculous by the mysterious power which one personality can exercise over others in certain abnormal nervous conditions, what Matthew Arnold called moral therapeutics.

As modern medical science fully acknowledges, faith in the healer is in such nervous disorders a real cause of cure. A medical writer, Dr. R. J. Ryle, however, showed in an article in the *Hibbert Journal*,

on *The Neurotic Theory of the Miracles of Healing* (vol. v, p. 585), that very many even of the healing miracles cannot be regarded as falling into the class of diseases capable of such treatment. The nature miracles remain unexplained.

Harnack further justifies his rejection of miracles by insisting on the credulity of the age in respect of such extraordinary occurrences, and the absence of the modern scientific conception of the uniformity of nature. Apart from the records of miracles, the Gospels give the impression of writings in which truth of fact as well as truth of thought and life is valued, and in which the intention to record only what is true is honestly carried out. If the evangelists had been as credulous as is suggested, we should have had not only a greater number of miracles, but the records would have been of an extravagant character, not marked by the reserve and sobriety which we do find. See *Incarnation*; *Jesus*; *Resurrection*. Consult *Miracles in the N.T.*, J. M. Thompson, 1911; *The Miracles of Jesus*, E. O. Davies, 1913; *Miracle Stories of the Bible*, A. Richardson, 1943; *Miracles*, C. S. Lewis, 1947.

**Miracle Play.** Type of medieval religious drama, often drawn from the legends of the saints. It cannot be strictly distinguished from the mystery play. The Latin comedies of Hroswitha (*q.v.*), based on legends of the saints, afford an early example. Miracle plays were from the first less associated with worship than the mysteries, and were usually acted—at first in Latin—by young clerics, boys, and even girls, on the eve of the saint's day. The earliest dramatic performance on record in England was a play of S. Katherine, written for his pupils by Geffrei, a Norman schoolmaster at Dunstable, about 1100. They were frequently acted in London about 1170. There are but scanty remains of English plays of this type, which appears to have been much less popular than the mystery. The Christmas play of S. George, still acted by boys in English villages, is a degenerate survival. The Cornish Life of S. Meriasek is of Breton origin.

Many French miracle plays are extant. Thirteenth century examples are Ruteboeuf's *Theophilus*, and the S. Nicholas of Jean Bodel of Arras. There is a collection of 40 miracles of the Virgin of the 14th century. These early plays are far more concise and dramatic than the unwieldy mystery plays of the 15th century, but resemble

them in the introduction of comic relief. There are also German and Italian miracle plays. The Persian religious drama of Hasan and Hosain, still often performed, presents close analogies to the miracle play. See *Drama*; *Morality*; *Mystery Play*. Consult *English Dramatic Literature*, vol. i, A. W. Ward, 1875; *English Miracle Plays*, a collection edited by A. W. Pollard, 1890; *English Religious Drama*, K. L. Bates, 1893; *The Medieval Stage*, E. K. Chambers, 2 vols., 1903; *English Miracle Plays*, E. H. Moore, 1907.

**Mirage.** Optical illusion produced by the refraction of light. It occurs when successive layers of air have different densities as a result of temperature differences. The most perfect images are seen in hot, sandy deserts and on the sea. In the former, lakes often appear to be mirrored in the sand, while on the sea inverted images of ships are sometimes seen, though no ship be in sight on the ocean.

The phenomenon is explained by the fact that a ray of light is bent when it passes from one medium into another. If, therefore, a ray passes through a series of layers differing continuously in density the path of the ray becomes a curve. The air is normally of greater density over the surface of the earth than at an altitude, and when to this permanent variation there are added temporary local variations caused by the ascent of heated air, abnormalities of visibility arise. Over a heated desert, for example, the hot air near the surface expands, its density decreases, and the refractive index of the lowest layer of air becomes small. The ordinary state of affairs is therefore reversed, but at some point above the surface normal conditions reassert themselves and the density and the refractive power decrease again. Any object viewed across such a heated area is thus seen by two sets of light rays, and an inverted and usually distorted image is visible, apparently floating on the sand. Mirages may be seen over tarred road surfaces on hot, windless days.

In polar regions another type of mirage is observed. Ships, icebergs, etc., appear to be suspended upside down in the clouds. Here the illusion is produced by a large gradient of refractive index, which is, in turn, caused by a warm layer of air resting on a colder one. Upper rays reaching the eye appear, therefore, to come from a ship inverted in the clouds. See *Light*; *Looming*; *Optics*.

**Miraj.** Town of Bombay, India. Two former states, Miraj senior and Miraj junior, are now merged in Bombay state. The former covered 368 sq. m., and had a pop. of 108,547; the latter had an area of 194 sq. m., and pop. 46,295. The town lies near the Krishna on the rly. from Poona to Belgaum, and is the junction of the line to Kolhapur. Pop. 27,000

**Miramichi.** River of New Brunswick, Canada. It rises near the centre of the prov., and flows N.E. to its outlet in Miramichi Bay, Gulf of St. Lawrence. Its chief tributaries are Little South West Miramichi, North West Miramichi, and Cain. All the streams are noted for their salmon fisheries. Length, 225 m., of which 55 m. are navigable, and 15 m. tidal.

**Miramichi Bay.** Indentation on the coast of New Brunswick, Canada. It is one of the largest arms of the Gulf of St. Lawrence, and receives the waters of the Miramichi river. Beaubair, Fox, Passage, and Neguac are long narrow islands which form an almost perfect barrier in a curve across the mouth of the bay.

**Miranda.** Maritime state in N. Venezuela, fronting the Caribbean Sea. It is mountainous in the N., but other parts are extremely fertile, containing some of the best coffee-growing districts in the republic. The capital is Los Teques. Area, 3,068 sq. m. Pop. 227, 604.

**Miranda.** Character in Shakespeare's comedy *The Tempest* (q.v.). Daughter of Prospero, the exiled duke of Milan, she lives with him on his island. In the play, at the age of sixteen, she becomes the instrument of Prospero's reconciliation with his old enemies. She is one of Shakespeare's most charming heroines.

**Miranda.** FRANCISCO ANTONIO GABRIEL DE (1750-1816). Venezuelan patriot. Born at Caracas, March 28, 1750, he took part in the U.S. War of Independence, 1778. He later entered the French Republican army, and fought against Prussia, 1792-93. During the Terror he fled



F. A. G. de Miranda  
Venezuelan patriot  
From a bust

to England, where he tried to gain support for his project for freeing Venezuela from the Spanish yoke, 1797-1804. After an ineffectual attempt to organize a rising in 1806, he landed again in South

America in 1810, was everywhere successful, and the following year Venezuela declared her independence. He was made dictator, but the following year serious dissensions arose; Miranda was defeated, handed over to the Spaniards, and, after five years in prison in Cadiz, died July 14, 1816.

**Mirandola.** City of Italy, in the prov. of Modena. It is 20 m. by rly. N.N.E. of Modena. The cathedral and communal palace date from the 16th century. The ruined castle of the Pico family, owners of Mirandola from the 14th century to the 18th, the churches of S. Francis and Jesus (slightly damaged in the Second Great War), and various antiquated buildings give it a picturesque appearance. Trade is carried on in rice and silk.

**Mirandola,** GIOVANNI PICO DELLA (1463-94). Italian philosopher. He was born Feb. 24, 1463,



Pico della Mirandola,  
Italian philosopher

at Mirandola, near Modena, and was considered one of the chief orators and poets of the time when only ten years old. He was the author of 900 theses *De omni re scibili* (Concerning everything that can be known), some of which were condemned as heretical. Mirandola retired to Florence, where he died Nov. 17, 1494. See *The Renaissance: Studies in Art and Poetry*, W. Pater, 1910.

**Mirbeau,** OCTAVE HENRI MARIE (1850-1917). French writer and dramatist. He was born, Feb. 16, 1850, at Trevières, and early adopted socialist and anti-clerical views. His *Lettres de la Chaumière*, 1886, gained him fame which was turned to notoriety by his *La Calvaire*, 1887, and *Sebastien Roch*, 1890, the latter work attacking the Jesuits. As a dramatist he is best known for two plays: *Les Mauvais Bergers*, 1897, which deals with social problems; and *Les Affaires sont les Affaires*, of which an English adaptation was made in 1905. Died Feb. 16, 1917.

**Mircea** (d. 1418). Prince of Wallachia, 1387-1418. Son of Radu II, he succeeded his brother as voivode and did homage to the king of Poland, 1389, and to the Turks in 1391. Notwithstanding this he was banished by the latter, and allying himself to Sigismund of Hungary in 1395, was defeated with him by the Turkish army of Bayazid I at Nicopolis, 1396. A

supporter of Musa in his struggle for the Turkish crown after the capture of Bayazid I by Timur in 1402, Mircea regained his power in Wallachia, but thereafter continued to pay tribute to Turkey.

**Mirdites.** Tribe of N. Albania. They number perhaps 25,000 and inhabit the mountainous region to the S.E. of Scutari (Shkoder), with their chief centre at Oroshi. Their territory is called Mirdita. Of the several tribes of N. Albania they are politically and numerically the chief. Backward in culture and in religion Roman Catholic, they have always opposed Turkish and other attempts to absorb them. They have hereditary chiefs known as capidans, descended from the house of John Marco. In 1868, when Prenk, son and successor of Bib Doda, the late reigning chief, was captured by the Turks and held as a hostage, the Mirdites refused to supply men to the Turkish army. The Turks after some time released Prenk, who as the result of his double-dealing with them involved his tribesmen in conflict with Turkey. The latter dispatched two punitive expeditions which ravaged their territory. Prenk was captured by the Turks in 1880 and banished. Another chief belonging to the ruling family was chosen, but his unpopular rule brought about anarchy. Prenk ultimately returned, but was assassinated in 1919. See *Albania*.

**Mirfield.** Urban dist. of the W. Riding, Yorks, England. It stands on the Calder, 5 m. N.E. of Huddersfield, and is served by two rly. lines and a canal. The chief building, S. Mary's church, dates from 1825 but embodies the tower of a 13th century church.

**Mirfield arms**



An industrial centre, Mirfield has manufactures of woollen and cotton goods, and malting is an industry. Water is supplied by the Huddersfield corporation, gas and electricity locally. Mirfield is noted in Domesday. Market day, Fri. Pop. 11,800.

**Mirfield Community.** Anglican religious order for priests, known as the Community of the Resurrection. Founded in 1892 at the Pusey House, by Dr. Gore, the community removed to Radley in 1893, and in 1898 to Mirfield (v.s.). Its members are occupied in mission preaching, holding retreats, training candidates for Holy Orders, and literary work. Buildings have been erected for a theological college, the course

occupying five or six years and including a degree in arts at Leeds university, where the society maintains a hostel. The charge is low, and repayment may be spread over six years after ordination. Half the cost of training is borne by the society. In 1903 a branch house was opened at Johannesburg. A branch priory has been established in London since 1914.

**Miri.** Seaport of Sarawak, British N. Borneo. Standing on the coast, in the Baram district, 30 m. N.W. of Claudetown, it is the centre of an important oilfield and exports petroleum. Miri was captured by the Japanese in Dec., 1941, the oilfields being put out of production before the British garrison withdrew. The town was retaken by the Allies on June 25, 1945.

**Mirim** OR **MERIM.** Lake of E. Uruguay and S. Brazil. It discharges its surplus water into the Lagoa dos Patos, on the Atlantic, and is separated from that ocean by salt lagoons. About 120 m. long, it varies in width from 5 to 25 m.

**Mirror.** Object with a smooth or polished reflecting surface for producing images of other objects, or for reflecting light and heat. Mirrors of polished bronze were used by the Egyptians, Greeks, and Romans. Praxiteles (328 B.C.) suggested polished silver plates as the best reflecting surface. Silver, steel, and aluminium have been employed for this purpose. Glass was first used in Venice about 1300, first as a protective sheet to burnished silver plates, and then backed with mercury. A sheet of tinfoil was placed on the glass, and over this a coating of quicksilver, which formed an adhesive amalgam, protected by a coat of paint and varnish.

The method introduced by Liebig in 1830 is to precipitate on glass an ammoniacal solution of silver salt, to which tartaric acid and sugar candy are added, and finish off with a coat of paint and varnish. Mirrors were first manufactured in England in 1673, and were small. About the time of Queen Anne they were made of heavy plate glass with bevelled edges. The surface of mirrors may be plane, convex, concave (as in pyrometers), or parabolic. Mirrors made of transparent plastic materials have the advantage of being far less fragile than glass ones. See *Celt*; *Japan*; *Optics*; *Telescope*.

**Mirza.** Persian title. After the name, it denotes a prince; before the name, it is the usual title for officials and scholars. The Vision of Mirza is one of Addison's best-known Spectator essays.

**Mirzapur.** District and town of India, in the Uttar union, in the Benares division. The district lies mostly S. of the Ganges, and includes part of the Son valley and part of the N. face of the Deccan plateau. Rice, wheat, and millet are the chief crops. The town is situated on the Ganges, about midway between Allahabad and Benares, is a grain and cotton market, and manufactures shellac. Lace and woollen carpets are also made. There are fine bathing ghats. Only a quarter of the total area is cultivated. Dist., area 4,322 sq. m.; pop. 899,929. Town, pop. 70,944.

**Misanthrope, LÆ.** A five-act comedy by Molière, produced at the Palais-Royal, Paris, June 4, 1666. Its slender plot concerns the unsuccessful suit of the misanthropic Alceste for the hand of the worldly minded but not wholly unlovable Célimène. While reflecting the essential barbarism of the court life of the period, it touches deep veins of human interest, and is usually regarded as Molière's greatest work, though not the most popular of his comedies. Alceste was acted by Molière; Célimène by his wife. *Le Misanthrope* provided the groundwork for Wycherley's *The Plain Dealer*, 1674.

**Misappropriation.** In English law, wrongful conversion to their own use, by trustees or other persons, of property entrusted to their care. This is punishable under the Larceny Acts.

**Miscarriage.** Expulsion of the foetus or immature offspring from the uterus before the end of the 28th week of pregnancy. After that date the term "premature labour" is employed if the delivery occurs before the full time. Terms in use are abortion, for expulsion of the foetus before quickening has occurred at 4½ months of pregnancy, and miscarriage for expulsion after that date; but for legal purposes this distinction is not recognized. See *Abortion*.

**Mischabel.** Mountain mass of the Pennine Alps (*g.v.*) in the canton of Valais, Switzerland. It lies between Monte Rosa and Visp, and two of its peaks, the Dom and the Taeschhorn, rise to 14,941 ft. and 14,758 ft. respectively. The Mischabel Joch is a pass between the latter mountain and Alphubel, leading from Zermatt to Fée at an alt. of 12,650 ft.

**Misdemeanour.** In English law, a crime punishable on indictment which is not a felony. There is no distinction of principle, because a felony is not necessarily more serious in itself than a mis-

demeanour. Thus, larceny is a felony, while perjury is only a misdemeanour. A conviction for a misdemeanour never involved forfeiture of land or goods, as a conviction for felony did.

**Miseno** (anc. Misenum Promontorium). Volcanic peninsula of Italy in the prov. of Naples, forming the W. side of the Gulf of Pozzuoli, about 10 m. W. of Naples. It terminates in Cape Miseno and contains the village so named, which stands near the site of the ancient Misenum. Porto di Miseno, the fine natural harbour on the N., and that called Mare Morto on the N.E., were formed about 30 B.C. into a great naval station for the Roman fleet. Remains of moles, a theatre, and baths, etc., exist. Misenum was destroyed by the Saracens in 890.

**Misérables, LÆS.** Novel by Victor Hugo. Published 1862, it was designed as a novel with a purpose, presenting a series of moving scenes from the life of the poor, with a number of striking characters and many digressions. A film version (1935), with Fredric March as the convict Jean Valjean and Charles Laughton as the police officer Javert, was popular, as was a radio version, with Henry Ainley as Valjean, broadcast serially by the B.B.C., 1939.

**Miserere.** The Latin title and the first word of Psalm 51 (Eng. *Have Mercy*), one of the seven penitential psalms (in the Vulgate, Ps. 50). In the C. of E. it is said kneeling during the Litany.

**Miserere, MISERICORD, OR PATIENCE.** In ecclesiastical architecture, a hinged seat of a stall in church, which can be lifted and leant against the back of the stall. On its under side is a bracket which provides a higher rest for the occupant of the stall. This feature was introduced for the benefit of aged ecclesiastics who might be fatigued by long standing. The under-bracket is often finely carved, as in the misereres of Henry VII's chapel, Westminster Abbey. See *illus.* p. 5770.

**Misericordia, OR BROTHERS OF MERCY.** Guild or brotherhood of laymen, founded at Florence in 1244 for the purpose of providing decent burial for the poor. The brothers undertook the entire cost and arrangements of the funerals, acting themselves as bearers. They rendered valuable services during the Black Death in 1348-49; and they adopted a kind of monastic garb with a hood covering all the face except the eyes, lest they should be recognized and rewarded.





Miserere in Henry VII's Chapel, Westminster Abbey. The carving depicts the Judgement of Solomon; the left group represents the women contending over the live child; on the right is seen the mother of the dead child substituting her baby for the living one; in the centre is Solomon on his throne delivering judgement. See p. 5789

**Mishmi.** Aboriginal hill-tribe in the N.E. corner of the Brahmaputra valley, Assam. Numbering a few hundreds, they may represent an ancient offshoot from the Miao of S. China, and are remarkable for their peculiar religion and customs.

**Mishna** (Heb. teaching). Jewish code embodying the oral law. A collection of rabbinical teaching and interpretations of the Mosaic law, the Mishna was compiled and edited in its present form by Rabbi Jehudah el Nasi, c. A.D. 200. Commentaries on the Mishna and the Mosaic law were embodied in a supplementary work called the Gemara, the two forming together the Talmud (*q.v.*). The Mishna was first printed in 1492 and has been published in most modern languages spoken by Jews.

**Misiones.** Territory in the N.E. of Argentina, stretching N.E. between Paraguay and Brazil. It is watered by the Paraná and the Uruguay with their tributaries. The Paraná flows along the Paraguayan frontier, the Uruguay dividing the territory from Brazil. Mainly hilly and forest-covered, Misiones grows maté, timber, tobacco, sugar, cereals, and fruits, and cattle are reared. In the 17th century the Jesuits founded many mission settlements in this region, which were mainly peopled by converted Indians. The chief town is Posadas on the Paraná. Area 11,749 sq. m.

Las Misiones is also the name of a dept. of Paraguay.

**Miskolcz.** Town of Hungary. It is situated on the Sajo on the edge of the Carpathian foothills, 116 m. by rly. N.E. of Budapest. The Calvinist church of S. Stephen dates from the 13th century, and there are R.C., Orthodox, and Lutheran churches. There is a considerable trade in wheat, wine,

and cattle. Flour-milling, pottery, and porcelain manufactures, and shoe-making are the main industries. Pop. 109,433.

Turned into a strong point by Germans and Hungarians during the Second Great War, Miskolcz was captured after fierce fighting by the 2nd Ukrainian army, Dec. 3, 1944, in the course of the Russian advance on Budapest.

**Mispickel.** Obsolete name for the mineral now generally known as arsenopyrite (*q.v.*).

**Misprision** (old Fr. *mes*, badly; late Lat. *prensio*, taking). Term originally meaning a mistake, in English law neglect of duty. The two chief kinds of misprision are misprision of treason and of felony. These offences are committed by knowing of treason or felony and concealing the same. If there is more than mere knowledge, *i.e.* if there is assent to the treason, the

assessor is guilty of substantive treason; and if there is assent to the felony, he is liable as an accessory before or after the fact. In addition to misprision of treason and felony, certain offences in the nature of contempts and high misdemeanours rank as misprisings. If a secretary of state or other high executive officer is guilty of maladministration, as Strafford was, the articles of impeachment describe his offences as high crimes, misdemeanours, and misprisings. The term is also used to describe certain offences which rank as contempt of court, *e.g.* advising a witness not to give evidence.

**Misrata.** Coastal city in Tripolitania, N. Africa. It consists of a large oasis, about 10 m. by 4 m., with 5,000 gardens, and is situated on the coastal caravan route to Homs and Tripoli. It was occupied by the Italians on July 8, 1912.

**Misrepresentation.** In English law, a false statement of fact, *i.e.* not of opinion. A transaction, such as a sale induced by a misrepresentation of a material fact, is voidable, *i.e.* can be repudiated by the party deceived, if he repudiates it as soon as he discovers the falsity of the statement, and if it is possible to put the parties in the same position as before. No action will lie for damages for misrepresentation unless the statement was either made fraudulently, knowing its falsity, or was a warranty.

**Missal** or **MASS-BOOK.** Office book of the R.C. Church. It contains the service for Mass throughout the year. Revised and printed under Pius V, when the council of Trent, 1570, ordered its use in all churches that could not claim uses of their own of 200 years' standing, it was again revised in 1604 and 1634. Of the nine service books used by the Church of England



Mishmi. Left, a chieftain of the tribe; right, girl wearing bamboo plugs to distend the lobes of the ears



before the Reformation, that known as the missal was in four parts: the antiphony or gradual, containing parts to be sung by the choir at high mass; the lectionary, or book of the epistles; the evangelistarium, or book of the Gospels; and the sacramentary, containing the prayers. The first mention



Missel Thrush, a common song-bird of the British hedgerows

of a missal is found in the 8th century. A plenary missal for use of priests appeared in the 11th or 12th century. There are various missals for different rites or uses, Ambrosian, Sarum, Hereford, Lincoln, York, Bangor, etc. See Prayer Book.

**Missel Thrush** or **MISTLE THRUSH** (*Turdus viscivorus*). Common British song-bird. Nearly related to the song thrush, but distinguished from it by its larger size, greyer colour, more prominent spots on the under parts, and the greyish white tips to the lateral

tail feathers, it is the largest of the British song-birds and is widely distributed, though in the N. of Scotland it is rather rare. Its song is most notable in the winter, especially in wet weather, giving it its local name of stormcock. It nests in trees in the early spring, and two or even three broods are reared in the season. It feeds on worms, grubs, snails, insects, and the berries of many plants, particularly the mistletoe, whence its name. See Eggs, colour plate.

**Missenden**, GREAT AND LITTLE.

Two parishes and villages of Bucks, England. They lie 9 m. S.E. of Aylesbury, having rly. connexion with London. Missenden Abbey, at Great Missenden, dates in part from the 14th century, and contains a Norman font. Little Missenden centres upon an Elizabethan manor house.

the medieval missionary. In this missionary work Englishmen early played a leading part: Willibrord, the first of note, went to the Netherlands c. 690; a little later Boniface of Crediton, in Devon, won the name Apostle of Germany.

(ii) 1100-1350: THE CRUSADES. The Crusades represent the answer of Christendom to that power which had caused the first setback to Christianity's missionary progress, Islam. It was the friars who came to see what a truly Christian campaign against the infidel should be. The two great orders, Franciscans and Dominicans, officially recognized their missionary duty in the same year, 1221. The greater glory belongs to the Franciscans. S. Francis himself preached before the sultan of Egypt in 1219. Raymond Lull died a martyr's death in Tunis, 1315. John of Montecorvino, first missionary from the church of the W. to E. Asia, 1294, established his cathedral in Peking. These heroic missions were on too small a scale for lasting effects.

(iii) 1500-1700: ROMAN CATHOLIC REVIVAL. With the Spaniard, Christianity reached S. America and the Philippines, joining them permanently to Christendom. With Portuguese trade, Christianity touched Africa S. of the Sahara; it was replanted around the Indian coast; for the first time it reached Burma, Malaya, the E. Indies, Indo-China, and Japan; it came, for the third time, and to stay, to China. Greatest among the pioneers was S. Francis Xavier, who died on the threshold of China's closed door in 1552. That door was opened at last by the learning of other Jesuit missionaries, most notably Matteo Ricci, who won the respect of Chinese officials and emperor.

Non-Roman Christianity was for the most part still inactive. John Eliot, a Cambridge Puritan, went to N. America in 1631, and began work among the Red Indians. The (Anglican) Society for Promoting Christian Knowledge, and the Society for the Propagation of the Gospel in Foreign Parts, were founded in 1698 and 1701 respectively; the (Presbyterian) Society in Scotland for Propagating Christian Knowledge in 1709. The first and third of these were founded primarily to meet home needs, but all made some beginnings at foreign missionary work. The German Protestant, Ziegenbalg, 1705, under Danish patronage, founded a mission at Tranquebar. The Moravians in 1732 began

## MISSIONS: EXPANSION OF CHRISTIANITY

John Foster, D.D.

*Here is a general account of missionary efforts made by the churches since the foundation of Christianity. See also articles on the Christian denominations, e.g. Baptists; Church of England; Congregationalism; Methodism, etc.; and on Carey; Chalmers; Livingstone; Francis Xavier, and other missionaries*

Christianity has from the outset been a missionary religion. From Christ Himself is the commission to go "into all the world and make disciples of all the nations." Christianity began within Judaism. The Acts of the Apostles contains the account of the opening of the door to the Gentiles, first to the Samaritans, regarded as half-Jews in race and in religion; then to the Ethiopian eunuch and the Roman centurion, both probably adherents of the synagogue; finally at Antioch, where they "spoke unto the Greeks also." It was from Antioch that the mission to the Gentiles fully began. S. Paul, Apostle of the Gentiles, did most to save Christianity from settling down as a sect within Judaism and to bring it to its fulfilment as a world religion.

Missionary expansion in the early centuries was helped by Roman communications, Greek language, and not least by the widespread dispersion of the Jews, whose influence provided in many a city a nucleus of monotheistic religion awaiting the Christian missionary. Before the year 200 Tertullian could speak of "places

of the Britons, unreached by the Romans, but subject to the law of Christ." About the same time, an eastern writer, Bardaisan, claimed that there were Christians in Bactria. Before 300 there is evidence of missions as far E. as India. Nowhere in the E., however, was Christianity to become anything more than a minority religion. By 313 in the West, under the Emperor Constantine, it was becoming the state religion of the Roman empire. Later missionary progress may be divided into four periods.

(i) 500-1100: THE DARK AGES. The church survived the Western Roman empire, and began to convert the barbarians who had destroyed it; the Franks (496), the Anglo-Saxons (597), Germany (from the 8th century), Scandinavia and the Magyars of Hungary (11th century). About the same time as these last victories of Latin Christianity, the Greek Church entered Russia. An adventurous mission from the church in Persia brought Christianity to China by 635, where it remained precariously till about 900. East and west, the monk was

missionary work in the W. Indies and Greenland. Methodists from England were at work among slaves in the W. Indies by 1786.

(iv) FROM 1792: MODERN MISSIONARY MOVEMENT. 1792 is the year usually taken to mark the missionary awakening. In that year William Carey was instrumental in forming the Baptist missionary society. In the next fifty years there followed all the main societies not only of the

aspiration. In China there are 14 universities and university colleges established by Protestant missions and 5 by R.C. One-fifth of all China's undergraduates, and one-tenth of high-school children, belong to Christian institutions. In India such schools and colleges have been even more numerous (e.g. Protestant colleges numbered about 40), owing to government grant-in-aid, a system which began in 1854 and lasted till the coming

of Indian self-government in 1947. In Africa many colonial governments have preferred to work through missions, and something like 70 p.c. of education has been under Christian influences, with medical and social work receiving subsidies also.

The Christian significance of medical missions is that they provide a demonstration of the Gospel. They have also in

many lands created the new professions of doctor and nurse, and given Christian ideals to influence their standards. Christian leper homes supplied the largest field for experiments which have led to the hopeful treatment of leprosy; and, again in many lands, Christians have been responsible for attacks on illiteracy.

#### A World Religion

Above all, the churches established by missions have in most cases taken root in the local soil and begun to produce their own leaders, until the church has become not only more widespread, but also more evenly spread, than at any other time. Though Christianity's strength of resources is still in western lands, it is not a western but, demonstrably, a world religion. The pope, in announcing the appointment of 32 new cardinals in 1946, said, "We have willed that the greatest possible number of races and peoples should be represented, as a true reflection of the universality of the Church." The same thing can be seen when 320 bishops of the Anglican communion gather at Lambeth from the four corners of the globe; or when there is a meeting of the council of Reformed and Presbyterian churches, the Methodist ecumenical conference, the Baptist world alliance, the international Congregational council, or the Lutheran world con-

vention. Some of these bodies used to think of themselves as national churches; others repudiated all state connexion and were content to be small sects saved out of the world. All have grown to world-wide proportions. Moreover, chiefly through their missionary work, they have been brought into cooperation. The Edinburgh missionary conference of 1910 marked the beginning of the international missionary council, chief agent of non-Roman missionary cooperation. Further conferences were held at Jerusalem 1923, Tambaram (Madras), 1938, and Whitby (Toronto), 1947. From 1910 onwards, too, there began that still wider mutual consultation, the ecumenical movement, which resulted in 1948 in the world council of churches, including every main tradition except the Roman Catholic.

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**Mississippi.** River of the U.S.A. It rises in Little Elk Lake, but Lake Itasca, Minnesota, 1,680 ft. alt., is generally regarded as its source. In its earlier course, marked by rapids and beautiful falls, it winds through a swampy country and forms many lakes. At Minneapolis, the head of its navigation for large ships, are the Falls of St. Anthony, where the river makes a descent of 80 ft. in half a mile. Nearly 80 m. below St. Paul it expands into the large and picturesque Pepin Lake, on the Wisconsin border, and from this point separates the states of Minnesota, Iowa, Missouri, Arkansas, and Louisiana on the W., and Wisconsin, Illinois, Kentucky, Tennessee, and Mississippi on the E.

Rapids with a fall of 21 ft. are met with at Rock Island; ship canals have been constructed. The Mississippi enters the Gulf of Mexico through many "bayous," the chief being the Atchafalaya and the Lafourche. Its length is about 2,460 m., but with its longest tributary, the Missouri, it is often accounted the longest river in the world; omitting the delta "passes" and old meanders, it may be shorter than the Amazon. At its junction

#### MISSIONARY SOCIETIES FORMED 1700-1840

British	American
1701 Society for the Propagation of the Gospel	1810 American Board
1792 Baptist	1814 Baptist
1795 London Missionary Society	1816 Bible Society
1796 Edinburgh and Glasgow Societies	1819 Methodist Episcopal
1799 Church Missionary Society	1835 Episcopal
1799 Religious Tract Society	1835 Dutch Reformed
1804 British and Foreign Bible Society	1837 Presbyterian
1809 Bible Society of Scotland	1838 Lutheran
1813 Methodist	
1825 Church of Scotland	<i>Continental</i>
1840 Irish Presbyterian	1797 Netherlands
1840 Welsh Presbyterian	1815 Basel
	1821 Danish
	1822 Paris Evangelical
	1824 Berlin
	1828 Rhenish
	1836 Leipzig
	1838 North German

British Isles, but of the mainland of Europe, and of the New World.

In the same period, missionary zeal among Roman Catholics revived, and the Christian church became a universal church, not only because it was commissioned to go into all the world, but because it actually went. There are Christians today in virtually every land.

The scale of contemporary missionary work is illustrated by facts and figures such as these: Protestant missionaries have translated the Bible, wholly or in part, into 1,120 languages. Nominal Christians in Africa S. of the Sahara have been estimated as 7 p.c. of the population, in India about 2 p.c., in Asia (apart from the Philippines) 1 p.c.

The influence of Christians is out of all proportion to their numbers. In many lands they hold leading positions in education, medicine, and social service; not a few have been leaders of national and international significance. With some more primitive peoples Christianity has succeeded to the position of the community religion, and as such has begun to do for them what the church in the Middle Ages did for our forefathers. In more complex civilizations Christianity has often contributed to the combating of social evils, and to the starting of new movements of idealism and

with the Missouri its breadth is 5,000 ft., and below New Orleans 2,475 ft. It receives many large tributaries, the more important being the Minnesota, Des Moines, Missouri, Arkansas, and Red from the W., and the Wisconsin, Illinois, Ohio, and Big Black from the E. Among important towns on its banks are Minneapolis, St. Paul, Dubuque, Moline, Rock Island, Burlington, Quincy, St. Louis, Memphis, Vicksburg, New Orleans.

The waters of the Mississippi have a gradual swell, which begins in Feb. and continues till June. They occasionally overflow the embankments and inundate the entire lower valley. The area originally subject to inundation was nearly 30,000 sq. m., but it has been largely reduced by a system of embankments (levees). The construction of these levees was begun early in the 18th century, and in 1916 the system, on which more than \$27,000,000 has been expended, comprised about 1,500 m. About 95 m. below New Orleans the river divides into several outlets, the principal being the S.W. Pass, the S. Pass, and the N. Pass. By means of jetties, known as Eads jetties after the designer, the navigability of the lower river has been considerably improved. These jetties, extending E. and W. of the S. Pass and measuring  $4\frac{1}{2}$  m., have enabled a channel of 30 ft. to be obtained, thus greatly adding to the importance of New Orleans as a port.

#### Flood Damage and Control

In April, 1927, a terrible disaster was caused by floods on the Mississippi and its tributaries, including the Arkansas. These rivers overflowed their banks to a depth of ten, and sometimes 20 feet, and covered over 1,000,000 acres of the most productive land in the United States. For three months the river was 100 miles wide at Greenville. New Orleans was only saved by blasting great gaps in the Poydras embankment. Relief measures were organized by Herbert Hoover, who estimated the loss at \$80,000,000. About 600,000 persons were rendered homeless or dependent on charity. In June, 1936, the Flood Control Act established a definite flood control policy which provided for federal participation in the construction of economically justified projects in cooperation with states or other local interests. For the improvement of the river system, which comprises some 15,000 miles of inland waterways and enables steamers to travel from the Gulf of



Mississippi. Map showing the river basin. Inset, the delta on the Gulf of Mexico

Mexico to the Great Lakes, an expenditure of over \$280,000,000 was made in 1937, the construction of 14 flood-control reservoirs in the Muskingum Valley, Ohio, being among the many improvements undertaken. Levees (q.v.) have been built from Rock Island, Illinois, to near Head of Passes, Louisiana, 484 m. above to 1,070 m. below Cairo. The Fort Peck dam and reservoir have improved navigation on the river and contribute to the control of flood water.

The river was first visited by a European in the 16th century, but nothing was known of it until 1673, when two Jesuits, Louis Joliet and Jacques Marquette, sailed down it as far as the mouth of the Arkansas. La Salle, in 1681-82, went down as far as the river mouth. At that time it flowed through soil claimed by France, and Frenchmen made a number of settlements on its banks. After the treaty of 1763 its course was the joint property of Great Britain and France. Spain secured the rights previously held by France, while the U.S.A., by the treaty of 1783, obtained the British ones; there was trouble between these two countries about the navigation, but this was ended when Louisiana was purchased by the U.S.A. in 1803. In the 19th century the U.S.A. conducted a thorough survey of the river and its tributaries. See Bluff; Louisiana; River. Consult Discovery of the Mississippi, J. G. Shea, 1903; The Opening of the Mississippi, F. A. Ogg, 1904.

**Mississippi.** A state of the U.S.A. A south central state, it has a coast-line of 85 m. on that part of the Gulf of Mexico known as Mississippi Sound. Its area is 46,716 sq. m., of which 296 are water. The surface rarely exceeds 800 ft. in height, and falls away S. and W. to the rich alluvial lands of the Mississippi and Yazoo valleys. These are known as the bottom lands, and of them there are 7,000 sq. m. in the delta of the Yazoo. The chief rivers are the Mississippi, which bounds it on the W., Pearl, Tombigbee, Yazoo, and Pascagoula. The state includes a number of islands.

A great amount of cotton is grown, and much maize. Other cereals are cultivated, and cattle, sheep, and pigs are reared; the sugar-cane is grown, and much land is under fruit. Important petroleum sources were discovered in 1941. By 1948 these had become the state's most important source of wealth apart from cotton. Jackson is the capital. Of the population of 2,183,796 almost half are negroes. Generally negroes are debarred from voting by educational and other tests. In 1946 a crippled ex-service man invited negroes to vote in the primaries for the first time and won a congressional seat.

As part of Louisiana, Mississippi was first settled by French colonists, who made their homes in a land hitherto inhabited solely by Indian tribes. It passed to England in 1763, but in 1783 was formally ceded to Spain, that country

having taken possession of it in 1781. A dispute soon arose about the boundary between the U.S.A. and the soil of Spain, the result being a treaty by which the future state was included in the U.S.A. The Spaniards vacated it in 1798, when it was made a territory.

In 1817 Mississippi was admitted to the Union as a state. A constitution was drawn up in that year, but the existing one dates from 1890. The state legislature consists of a senate and a house of representatives, both elected for four years. The state sends two senators and eight representatives to Congress.

**Mississippian.** In geology, a group of limestone rocks well developed in the Mississippi Basin, U.S.A. Of Lower Carboniferous age, they roughly correspond to the Carboniferous Limestones of the U.K. See Carboniferous System.

**Mississippi Scheme.** Financial enterprise devised with the object of restoring the shaken credit of France. In 1715, when Philip of Orleans became regent, the finances of France were in an appalling condition; national bankruptcy was almost inevitable. It was then that John Law persuaded Orleans to approve his scheme and started a bank in France.

With this for a basis, Law acquired the sole right to trade in the vast region around the Mississippi which he called Louisiana, and in 1717 he founded a company for this purpose. Having turned his bank into a national institution with the guarantee of the state behind its notes, Law planned a much bigger concern. Two other trading companies were amalgamated with his, and under him a new *Compagnie des Indes* dominated practically the whole of France's foreign trade. With the issuing of new capital for its activities the gamble began. The shares rose rapidly in value, while the company purchased the right to manage the mint and to farm much of the national revenue. Finally the national debt was taken over, the lenders receiving shares in the company to which the government paid interest at 3 p.c. New shares were issued at a large premium, and in 1719 were selling at forty times their face value.

Armed with absolute power, Law took strong measures to avert a collapse, but his edicts, fixing the price of the shares, and in other ways striving to perpetuate an artificial state of affairs, failed miserably of their purpose. By July, 1720, the bubble had burst.

The government took back the national debt, but speculators had suffered huge losses. See Law, John.

**Mississippi Sound.** Channel between the coast of Alabama and Mississippi states, U.S.A., and several narrow islands which cut it off from the Gulf of Mexico. About 70 m. long, with a mean breadth of 8 m., it extends from Lake Borgne to Mobile Bay, and is navigable by coasting vessels.

**Missive** (Lat. *missus*, sent). In Scots law, a letter exchanged between two parties, in which the one specifies and the other accepts the terms and conditions of an offer of purchase or sale, or other mutual transaction. A missive constitutes a legal contract.

**Missolonghi, MESOLONGHI, OR MESOLONGION.** Town of Greece. Situated on a swampy plain N. of the Gulf of Patras, and about 20 m. N.W. of Patras, it is the capital of the dept. of Aetolia and Acarnania. It has a trade in currants,



Missolonghi, Greece. Byron's statue, erected in 1881 over the mound in which his heart was buried

valonia, and local products. The town was formerly of some military importance, being besieged unsuccessfully by the Turks in 1821-22 and in 1825-26 during the Greek War of Independence. Byron died here on April 19, 1824. Pop. 9,270.

**Missoula.** City of Montana, U.S.A., the co. seat of Missoula co. It stands on the Missoula river, 125 m. W.N.W. of Helena, and is served by the Northern Pacific and the Chicago, Milwaukee and Puget Sound rlys. It contains the state university. The Northern Pacific Rly. has workshops here, and lumber milling is carried on. Missoula was founded in 1864 and received a city charter in 1887. At Jumbo Mountain, E. of the

town, an extensive series of horizontal markings represents shore lines of the former glacial lake Missoula. The town still has a frontier atmosphere; as late as 1935 redskins camped near by. Pop. 18,449.

**Missouri.** River of the U.S.A. The longest tributary of the Mississippi river, it is formed by the junction of the Madison, Jefferson, and Gallatin rivers, which have their sources in the Rocky Mountains and unite at Gallatin City in Montana. Thence it flows N. and N.E. through a mountainous district, and traverses a deep cañon called the Gates of the Rocky Mountains, the river here being compressed to 450 ft. for about 6 m. At Great Falls it makes a descent of 350 ft. in about 16 m., passing over a series of cataracts of much grandeur, the highest of which has a vertical drop of 90 ft. Below Fort Benton it turns E., passes through N. and S. Dakota in a S.E. direction, forms the boundary between Iowa and Missouri on the E. and Kansas and Nebraska on the W., and finally takes an E. course across Missouri to join the Mississippi 20 m. above St. Louis.

Measured from the source of the Jefferson its length is 2,950 m., while from Gallatin City to the Mississippi it is 2,700 m. Near the Grand Falls its breadth is 1,500 ft., at Sioux City 2,500 ft., and at its entrance to the Mississippi about 3,000 ft. It has several large tributaries, the principal being the Milk and Yellowstone in Montana, the James and White in South Dakota, the Nebraska or Platte in Nebraska, and the Kansas in Kansas. It drains a basin with an area of nearly 600,000 sq. m., and is navigable during part of the year to Great Falls, but in the low water season only to its confluence with the Yellowstone, its largest affluent. On its banks are many important towns, including Omaha, Atchison, Leavenworth, Kansas City, and Jefferson City. Its waters are turbid, which gives rise to its name, meaning mud river. Fort Peck dam and reservoir in Montana were completed in 1940. The dam was part of a scheme for improving navigation on the river, for controlling floods, and providing hydro-electric power. It is 250 ft. high, with a volume of 128,000,000 cu. yds. The reservoir has an area of 383 sq. m. and holds 6,326,000 million gallons.

**Missouri.** Central state of the U.S.A. Its area is 69,420 sq. m., of which nearly 700 are covered with

water. It is bisected by the Missouri river, which also forms the upper part of the W. boundary; the Mississippi marks the E. frontier. S. of the Missouri the surface is relieved by the forest-clothed Ozark Mts., the N. portion consisting of prairie and bottom lands, wooded only in part. An agricultural state, it yields rich crops of maize, wheat, oats, potatoes, cotton, tobacco, and flax. Stock-raising is carried on.

Missouri is the largest zinc-and lead-producing state of the Union, has more than 14,000 sq. m. of coalfields in operation, and a considerable output of iron ore and other minerals. Slaughtering and meat-packing, flour-milling, and boot and shoe making are among the many valuable industries. There are a state and other universities, besides numerous colleges, and, in addition to the rivers, transport facilities include 6,882 miles of steam and 263 miles of electric railways. Two liberal newspapers, the St. Louis Post-Dispatch and the Kansas City Star, have national influence.

The state capital is Jefferson City, but Missouri contains three larger cities, St. Louis, Kansas City, and St. Joseph. Other cities are Joplin, Springfield, Sedalia, Hannibal, Webb City, and Carthage. The pop. is 3,784,664, only a small proportion being negroes, with many of German descent.

Missouri was part of Louisiana, and as such was settled by the French. In 1762 it was transferred to Spain, and in 1803 the large district of which the future state formed part was sold to the U.S.A. In 1812 Missouri was made a territory, and in 1821 was admitted to the Union as a state. It is a border state, and gave 118,000 troops to the S. army and 116,000 to the N. army in the Civil War. It is governed by a general assembly which consists of a senate, elected for four years, and a house of representatives, elected for two. The franchise requires a short residential qualification. Politically, it preserves a balance between Republican elements representing the urban well-to-do and Democratic ones, representing small-town interests and those of the workers in the cities. It sends two senators and 16 representatives to Congress. *Consult* History of Missouri, P. S. Ruder, 1927.

**Missouri Compromise.** Arrangement made in 1820 by which the territory of Missouri was ad-

mitted as a state of the American Union. The state constitution submitted by Missouri recognized slavery, a fact which aroused a vehement agitation against it in the Northern states, and caused a two-years' deadlock in congress, the senate

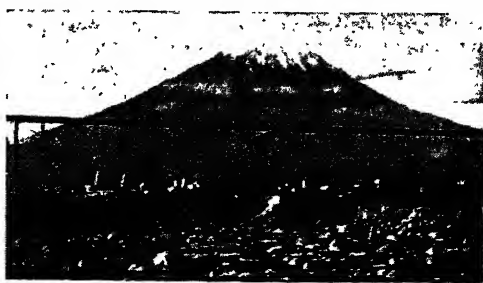
supporting and the house of representatives opposing the application. Ultimately an agreement was attained by which slavery was prohibited in the whole of the Louisiana Purchase N. of lat. 36° 30', except that part of it forming the territory of Missouri, nearly all of which lay to the N. of that line. The repeal of this arrangement in 1854 led to the formation of the Republican party and precipitated the Civil War. Missouri was admitted to the Union Aug. 10, 1821.

**Mist.** Cloud of minute particles of water at ground level. Meteorologically the distinction between mist and fog is one of degree, the latter term being applied when visibility is less than 1 km. and mist when it is greater than this but less than 2 km. After a clear, cold night, mist frequently fills the valleys; in rainy weather mist enshrouds the hill tops, though none may be present in the valleys.

**Mistake.** In English law, an error of fact which entitles the party who has paid money under the mistake to recover it, or a party who has entered into a transaction to have it set aside. A mistake of law cannot be pleaded, nor will anyone be allowed to say that he was mistaken as to the meaning of the words in a contract. Where there has been a mutual mistake in the drawing up of a contract or conveyance, so that it expresses something which the parties had not really agreed, the court has jurisdiction to rectify the document so as to cause it to express the real intention of the parties.

**Mistassini.** Lake in the extreme N. of Quebec, Canada, drained by the Rupert river. Small islands divide it down the centre into practically two sheets of water. Length 100 m., breadth 15 to 20 m., depth 300 to 400 ft.

**Mister.** English masculine title of respect, abbreviated in writing to Mr. A variant of master, it is



Misti. View of the Peruvian volcano, showing the city of Arequipa in the foreground

used as a prefix in speaking in a ceremonious way of anyone, and sometimes in addressing a man in speech or writing. In its present sense it has been used since the 15th century or thereabouts, when it supplanted master. It is also used as a prefix to certain titles of office, e.g. Mr. Speaker. The feminine is mistress (q.v.). The French equivalent is monsieur, the German is herr, and the Spanish señor.

**Misti,** EL. Volcanic mt. of Peru in the prov. of Arequipa. It is situated a few miles N.E. of the city of Arequipa. Alt. 20,000 ft.

**Mistinguett.** French actress. She was born Jeanne Bourgeois, and made her first stage appearance at a Paris music-hall, appearing at the Gaîté Rochecouart from 1899 to 1907, where she enjoyed a sensational success as



Mistinguett, French actress

singer and dancer. After several seasons in revue at the Moulin Rouge (of which she was for many years part-proprietor) and the Bouffes-Parisiens, she was partnered by Maurice Chevalier (q.v.) at the Casino de Paris, and the Folies-Bergères in the years before and after the First Great War. The songs she introduced were immensely popular in Paris during the 1920s. She first appeared in London at the Casino Theatre, 1947. Her autobiography was translated into English under the title Mistinguett and her Confessions, 1938.

**Mistletoe** (*Viscum album*). An evergreen semi-parasitic shrub of the family Loranthaceae. Native of Europe and North Asia, its stems vary in length from a foot to four ft., and are yellowish-green in colour. The leathery leaves are of the same colour, and are oval-lance-shaped, mostly in pairs. The



small green flowers are unisexual, and consist of four sepals, with four stamens, or an ovary with simple stigma. The berries are white, a third of an inch in diameter, with a single seed invested by glutinous pulp. The berries are eaten by birds, and these seeds become attached to the branches of trees by their agency. On germination the embryo pierces the bark and penetrates to the wood. It draws most of its food from



Mistletoe. Sprays of leaves and berries

the tree, but manufactures carbohydrates in its leaves. Its host plants are very numerous, the chief being black poplar and apple in England and the plains of France; but in Dauphiné and the Rhine valley it is most abundant on Scots pine. American mistletoe, of which there are several species, forms a distinct genus.

The mistletoe is prominent in European folk-lore as a magical plant credited with many virtues, from giving the power to see ghosts to healing diseases. See Balder; Druid; Golden Bough.

**Mistral.** Piercingly cold, dry wind experienced chiefly in winter along the Rhône valley and the coasts of the Lion gulf. A depression over the Mediterranean, accompanied by anti-clockwise circulation of the air, brings down heavy cold air from the central plateau of France as a N.W. wind, and causes a hot sirocco to blow from the African coasts northward. The mistral, characterised by clear skies and bright sunshine, can develop into a wind of great violence, and in the Rhône valley velocities of 90 m.p.h. have been recorded. See Bora; Sirocco.

**Mistral, FRÉDÉRIC** (1830-1914). Provençal poet. He was born Sept. 8, 1830, at Maillane, Bouches-du-



Frédéric Mistral, Provençal poet

Rhône. His rustic epic, *Mirèio*, 1859, gave wide recognition to the movement for reviving Provençal language and literature. It was followed by other notable

works in the Provençal language; *Calendau*, partly legendary, partly allegorical, 1867; and *Lis Isolo d'Or* (The Golden Isles), a collection of his shortest poems, 1875. Later works

were *Nerto*, a light romantic tale in verse, 1884; *Lou Pouèmo dóu Rouse*, an epic of the Rhône, 1897; and *Moun espelido*, 1906, translated into English as *Memoirs of Mistral*, C. E. Maud, 1907. In 1904 Mistral received half of the Nobel prize for literature, and devoted it to the purchase of a palace in Arles in which to house the Félibrean Museum. He died March 25, 1914. Consult Mistral, C. A. Downer, 1901; Bibliographie Mistralienne, E. Lefèvre, 1903.

**Mistral, GABRIELA** (b. 1889). Chilean poet and educationist. Liciña Godoy-y-Alcayaga was born

April 7, 1889, and became a teacher. Director of the Magallanes elementary school, in southern Chile, she was later appointed to the consular service, representing her country at Madrid, Lisbon, Rio de Janeiro, Petropolis (Brazil), and Los Angeles. She was professor of history of Spanish civilization at Barnard College, New York, 1931, and secretary of the international institute for intellectual cooperation (League of Nations) before the Second Great War.

Her literary reputation was first established abroad with *Desolación*, 1922, a collection of prose and verse, though much of her early work such as *La Voz de Elqui*, 1908, was widely read in S. America. Her other collections included *Lecturas para Mujeres*, 1923; *Nubes Blancas*, 1923, and *Tala*, 1938. She was awarded the Nobel prize for literature in 1945. Much of her poetry shows traits of affinity with Buddhist thought.

**Mistress.** English title of respect, the feminine of master, or mister. In English, in the form missis, abbreviated to Mrs., it is the customary way of addressing untitled married women. The French equivalent is madame, the German frau, and the Spanish señora. It is also used for any woman in a position of authority, e.g. the mistress of a household, or the mistress at a school. Another use is for a woman who, not being his wife, lives in sexual relationship with a man.

In Great Britain the mistress of the robes is an official of the queen's household, the post being held by a peeress of high rank. See Royal Household.

**Mistretta** (anc. Amestratus, Amastra, and Mytistratum). Town of Sicily. It stands on the Regitano 11 m. by road S. of San Stefano di Camastra on the coast rly. and 61 m. E.S.E. of Palermo. Situated at an alt. of 3,228 ft., it is on the only high road across the Monti Nebrodi to Nicosia. Pop. 14,000.

**Misurata.** Town of Tripolitania, N. Africa. On the coastal route to Homs and Tripoli, it is situated on a bay some 110 m. E. of the latter. Built around a large oasis, it produces dates and is a fruit-growing centre. During the First Great War it was the capital of the ephemeral republic of Tripolitania, under the Arab bandit Ramadan Scetuni. The town was occupied on Jan. 18, 1943, by troops of the British 8th army during the final advance that resulted in the expulsion of the Axis from N. Africa. Pop. 45,000.

**Mitau.** German name for the Latvian town of Jelgava (q.v.).

**Mitcham.** Borough of Surrey, England. It is 10 m. S. of London, with rly. and London Transport services. It gives its name to a bor. constituency. On the Wandle, it has three eccles. districts, the churches being Christ Church, S. Mark, and SS. Peter and Paul. Mitcham Common, 480 acres, was one of the earliest homes of golf in England, and the village green has long been famous for cricketers. The industries include light engineering and the making of fireworks, chocolate, paints, edible fats, but the growing of lavender and other herbs for scents has practically died out. The charter fair held annually in time of peace has been in existence from ancient times; it was held on the old green for the last time in 1923. Pop. 65,000.

**Mitchel, JOHN** (1815-75). Irish nationalist and journalist. Born in co. Londonderry, Nov. 3, 1815,



John Mitchel, Irish nationalist

the son of a Presbyterian minister and educated at Trinity College, Dublin, he was prosecuted in 1843 for writing seditious articles in *The United Irishman*, and was sentenced to transportation for 14 years. Escaping from Van Diemen's Land, he made his way in



1853 to America, where he became a prominent advocate of slaveholding and the Southern cause. In 1875, while still in America, he was elected member for Tipperary. His right to take his seat was denied on the ground of his conviction for treason felony, but the electors returned him a second time. Mitchell returned from America to contest the point, but died at Dromalane, March 20.

**Mitchell.** Peak of the Black Mts., in N. Carolina, U.S.A. Known also as Mitchell's Peak and Black Dome, it is 6,711 ft. in alt., the highest summit of the U.S.A. east of the Rocky Mts. See Appalachians.

**Mitchell.** Type of American bomber, also employed by the R.A.F. in the Second Great War. Designed by the North American co., and known to the U.S. army as the B-25, it was named after Gen. William Mitchell (1879-1936), a protagonist of the bomber in modern warfare. As a heavily armed high-speed medium bomber, the Mitchell was successfully used in every theatre of war. It had two 1,700 h.p. Wright Cyclone engines, affording a maximum speed of 275 m.p.h., with full bomb load of 3,000 lb. The crew numbered five. See *Aeroplane illus.* p. 131.

**Mitchell, ABE** (1887-1947). English golfer, born at East Grinstead. He reached the semi-final of the amateur championship in 1910, and played for England against Scotland in 1910-11-12. Having been runner-up in the amateur championship of 1912, he turned professional, and won the gold medal at the Daily Mail and the News of the World tournaments in 1919. He played for Great Britain against the U.S.A. in Ryder Cup matches, 1921, 1929, 1931, 1933. He died June 11, 1947.

**Mitchell, CHARLES** (1861-1918). British boxer. Born in Birmingham, he defeated Bob Cunningham in a knuckle fight there early in 1878. In 1882 he won the middleweight and heavyweight championships of England, and soon visited America, where he gained several notable victories but was defeated by John L. Sullivan. He again fought the latter, at Chantilly in 1888, with bare knuckles, the contest resulting in a draw after 39 rounds. Mitchell challenged Jim Corbett, American world champion, but was defeated after three rounds, at Jacksonville, 1894. He died April 2, 1918.

**Mitchell, JOHN THOMAS WHITEHEAD** (1828-95). British business

man. Born at Rochdale, Oct. 18, 1828, he began to work in a cotton mill as a child of 10, and, having obtained some education in his leisure, joined the Rochdale Pioneers cooperative society. He started the Rochdale system of profit-sharing, and became a director of the Cooperative Wholesale Society in 1869 and its chairman in 1874. Mitchell, who was almost entirely responsible for the development of the enterprise, died March 16, 1895. *Consult Life*, P. Redfern, 1923.

**Mitchell, SIR PETER CHALMERS** (1864-1945). A British zoologist.

Born at Dunfermline, Nov. 23,



Sir Peter Chalmers Mitchell, British zoologist

1864, and educated at Aberdeen, Oxford, Berlin, and Leipzig, he was university demonstrator of comparative anatomy at Oxford before becoming secretary of the Zoological Society in 1903, and F.R.S., 1906. Under his direction many improvements were made in the London Zoological Gardens. Knighted in 1929, he resigned five years later and was succeeded by Julian Huxley. His writings include *The Childhood of Animals*, 1912; *Materialism and Vitalism in Biology*, 1930; *My Fill of Days*, 1937; *My House in Malaya*, 1938. He died July 2, 1945.

**Mitchell, REGINALD JOHN** (1895-1937). British aircraft designer. Born at Stoke-upon-Trent, he served his engineering apprenticeship and in 1916 joined the Supermarine Aviation Works (Vickers), becoming chief engineer and designer in 1920. In 1927 he became a director of the company and was awarded the silver medal of the Royal Aeronautical Society for his winning seaplane in the Schneider trophy contest. For his work on the S6B, which won the trophy outright for Great Britain in 1931, he was created C.B.E. Mitchell also designed the military flying boats Southampton, Scapa, and Stranraer, and the amphibious Seagull and Walrus. His Spitfire (q.v.) fighter, based on experience with Schneider trophy machines, first flew in 1936, going into service with the R.A.F. in 1938. Mitchell died June 11, 1937, the world's greatest aircraft designer. In a film, *The First of the Few*, 1942, Leslie Howard portrayed Mitchell.

**Mitchell, SILAS WEIR** (1829-1914). American neurologist and author. Born in Philadelphia, Feb.



S. Weir Mitchell, American neurologist

15, 1829, and educated at Jefferson medical college there, he inaugurated the Weir-Mitchell treatment for neurasthenia, hysteria, etc., substituting massage, rest, and isolation for the exercise previously advocated. His treatment became famous, and he was president of the Association of American Physicians, 1887, and of the American Neurological Association, 1908-09. Among his scientific books are *Injuries to Nerves and their Consequences*, 1864; *Rest in the Treatment of Disease*, 1875; *Clinical Lessons on Nervous Diseases*, 1895. Weir Mitchell was a prolific writer of children's books, among which is *The Wonderful Stories of Fuz-buz, the Fly, and Mother Grabem, the Spider*, 1867; and novels, e.g. *Roland Blake*, 1884; *John Sherwood, Ironmaster*, 1911. He died Jan. 4, 1914. See *Weir Mitchell Treatment*.

**Mitchison, NAOMI MARGARET** (b. 1897). A Scottish novelist. Daughter of J. S. Haldane (q.v.), she was born in Edinburgh, Nov. 1, 1897, and went to the Dragon School, Oxford. She wrote vivid novels and stories dealing with the ancient world or mythological themes, like *Cloud Cuckoo Land*, 1925; *The Corn King and the Spring Queen*, 1931; *The Delicate Fire*, 1933. A more urgent note was sounded in *The Moral Basis of Politics*, 1938; *The Blood of the Martyrs*, 1939.

**Mite.** Small creature belonging to the class Arachnida and order Acarina. Most mites are very



Itch mite, highly magnified

small, and some resemble miniature spiders. They have no "waist," the thorax and abdomen being fused together, and the latter entirely unsegmented. Many are parasitic and do considerable damage, some being the cause or vehicle of serious disease. Thus the diseases known as itch and mange (q.v.) are caused by mites that attack the skin. Another species, commonly known as



Mite. Left, specimens of *Rhizoglyphus echinopus*, mites which live between the scales of bulbs. Right, Big Bud mites, *Eriophyes ribis*, which infest currant buds. All highly magnified



the harvest bug, bores, during its larval stage, into the human skin, causing great irritation. A red mite is a parasitic pest of poultry and cage birds. Another mite, commonly known as the red spider, invades hop gardens and does much damage in greenhouses by sucking the juices of plants. A wormlike mite of the genus *Demodex* inhabits the sebaceous follicles of the human skin. Others infest cheese, flour, etc. See Insect.

**Mitford, MARY RUSSELL** (1787-1855). British novelist and dramatist. She was born at Alresford, Hants, Dec. 16, 1787, the daughter of a doctor, whose extravagances kept her poor all her life. Her tragedies, *Julian*, 1823; *The Foscari*,



Mary Russell Mitford

1826; *Rienzi*, 1828; and *Charles I*, 1834, met with tolerable success, though none is now acted. Her fame rests more surely on sketches of country life and character, contributed in the first instance to *The Lady's Magazine*, 1824-32, and republished as *Our Village*. In 1852 appeared *Recollections of Literary Life*. Mary Mitford died at Swallowfield, near Reading, Jan. 10, 1855. Consult *Life and Letters*, ed. A. G. L'Estrange, 1870.



William Mitford, British historian

**Mitford, WILLIAM** (1744-1827). British historian. Born Feb. 10, 1744, at Beaulieu, Hants, he was educated at Queen's College, Oxford.

In 1761 he inherited his father's estate at Exbury, and devoted himself to the study of Greek. At the suggestion of Gibbon, a fellow officer in the Hampshire militia, he wrote a *History of Greece*, 1784-1810, which, though painstaking and accurate so far as it goes, is vitiated by the author's dislike of democratic institutions. Between 1785 and 1818 Mitford represented Newport, Cornwall, Beeralston, and New Romney in parliament. He died at Exbury, Feb. 10, 1827.

**Mitho** or **MYTHO**. Town and river port of Cochin-China, French Indo-China. It is 23 m. from the sea on the chief distributary of the Mekong delta, and is the terminus of a rly. through Saigon to the coast of Vietnam.

**Mithradates VI** or **MITHRIDATES** (131-63 B.C.). King of Pontus. On the murder of his father, Mithradates V, 120 B.C., he became king, and on reaching man's estate extended his conquests to the Crimea and parts of Armenia. Ordered by the Romans

to give up Cappadocia, which he had annexed, he defeated all efforts to oust him, and eventually overran the whole of the Roman province of Asia. No fewer than 80,000 Roman citizens resident in various towns of the province were put to death by his orders. In 87 B.C. Sulla arrived in Greece, into which Mithradates had thrown an army, and signally defeated the king at Chaeronea and Orchomenos in 86, while another Roman army under Fimbria defeated him in Asia, and he concluded peace.

Fighting was renewed again in 83 and 82 B.C., but was not of long

duration. The third Mithradatic War began in 74, and lasted till 63. Lucillus, the Roman general in command, was at first successful, driving Mithradates from Pontus and defeating also his brother-in-law, Tigranes, king of Armenia, with whom Mithradates had taken refuge. He penetrated too far, however, into Mesopotamian Armenia, and was compelled to return. In the meantime Mithradates recovered the greater portion of Pontus, and the military efforts of eight years were brought to nought. The war was finally brought to an end by Pompey, whose army drove Mithradates into the Crimea, where, at his request, a Gallic attendant put an end to his life.

**Mithras**, or **MITHRA**. Ancient Aryan god of the common ancestors of Persians and Indians. In early Zoroastrianism, he had sunk to the position of an angel of light, attendant of Ormuzd (Ahura-Mazda), but he increased in importance in the Achaemenian period and later, being looked upon as the sun god and the protector of man. His worship developed into a major religion, Mithraism, which reached Rome c. 68 B.C. Widespread in the Roman army, it was a serious rival of Christianity. Its places of worship, with central altar-piece representing Mithras slaying a bull, have been found on many Roman sites. Its rites included baptism and various stages of initiation. Mithraism was suppressed c. 378.

**Mitla** or **MICTLAN** (Place of the dead). Village of Mexico. It is situated 30 m. E. of Oaxaca in the dist. of Tlaxiotala. Within a mountain-girt valley are five groups of ancient buildings. Rectangular in shape, massive and built of dressed stone, each group is arranged as a quadrangle with a paved inner court; the exterior walls have neither door nor window, and the inner walls are pierced by doorways with single stone slab lintels. In 1495 the Aztecs captured the place, which was probably built by early Mayan priests. See Mexico.

**Mitosis**. In biology, process of nuclear division. It involves the longitudinal splitting of each constituent chromosome into two equal parts and the separation of these parts for the production of two new nuclei equivalent in every way to the original.

**Mitrailleuse** (Fr. *mitraille*, grape shot). French name for the machine-gun in general. The original Montigny mitrailleuse was



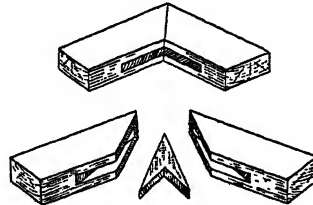
Mithradates VI, King of Pontus  
From a coin

taken up by the French in 1869 and introduced in the army for the Franco-Prussian War, 1870-71. See Machine-Gun.

**Mitral Valve.** Valve which lies between the left auricle and the left ventricle of the heart. It is so called from the likeness to a bishop's mitre of two flaps which form it. When the heart muscle is in systole, *i.e.* contracting, the valve opens and blood passes from auricle into ventricle. When the heart muscle is in diastole, *i.e.* relaxing, the valve closes and prevents the back flow of blood from ventricle into auricle. With local inflammation, associated with acute rheumatism, this valve may become narrowed and incompetent, the blood finding its way backwards during diastole. This condition, known as mitral-stenosis, tends to be progressive, and is serious. See Heart.

**Mitre.** Head-dress of bishops and certain abbots of the Western Church, and occasionally of other ecclesiastics. The Jewish high priests wore a tall form of head-dress, called *mitra* in the Septuagint, but it is denied that the mitre was an adaptation of this. In its early forms, the mitre, which came into use about the 10th century, was low and simple. In the 14th century it increased to a foot or more in height. In the Church of England mitres fell into gradual disuse after the Reformation, disappearing in the 18th century, but were revived by some Anglican bishops after 1885. The English

right angle, of two similar blocks or mouldings, the meeting ends being equally bevelled. In some



Mitre. Thick inside key for mitre joint. Above, assembled. Lower, in sections

ancient Greek structures, the mitre was not carried straight through the entire joint, but was deflected, thus making the joining half mitre and half butt-joint. With double blocks the mitring was generally done on the inner blocks, the outer forming a butt-joint. See Joinery.

**Mitre, BARTOLOMÉ (1821-1906).** Argentine soldier, president, and man of letters. Born at Buenos



Bartolomé Mitre, Argentine statesman

Aires, June 26, 1821, he began his public life as journalist in 1838 at Montevideo. Leaving Uruguay for Bolivia, he became chief of the staff to the president, on whose fall he was exiled and went to Peru, thence to Chile, where he became noted as a journalist, and for attacks on the government was again exiled.

In 1852 Mitre returned to Argentina, and having taken part in the successful revolt against Rosas when Buenos Aires became an independent province, he was successively commander-in-chief of its army, minister of war, and minister of government and foreign relations. In 1862 he was elected president of the confederation for six years. Against Paraguay, 1865-70, he commanded Argentine, Brazilian, and Uruguayan troops. Founder of *La Nacion (q.v.)*, he was author of *Historia de Belgrano y de la Independencia Argentina*, 1859, and *Historia de San Martin y de la Emancipación Sud-Americana*, 1889-90. Never successful again as a presidential candidate, he died Jan. 18, 1906.

**Mitsubishi (Jap., three diamonds).** Japanese industrial trust, so called from the device on the flag of the steamship company which was its earliest enterprise.

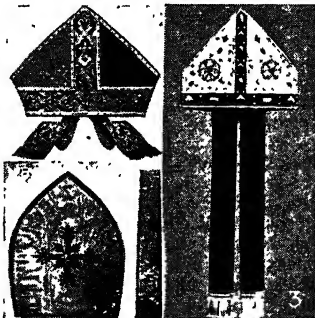
Under the direction of Iwasaki, the trust came to the fore in the second half of the 19th century, when the law against the operation of ocean-going ships was repealed. In 1874 the government granted the Mitsubishi Steamship Co. a subsidy and transferred to its ownership some 60 ships bought abroad by the government for the Formosa expedition. In 1885 the line was amalgamated with the Union Transport Co. to form the Nippon Yusen Kaisha (Japanese Mail Steamship Co.). In 1946, when the trust was dissolved by order of the Americans, the Mitsubishi interests included banking, shipbuilding (with dockyards at Nagasaki), manufacturing (including motors and aircraft), real estate, and insurance, and the total capital of the 38 corporations was 2,767 million yen.

**Mitsui.** Oldest of the *Zaibatsu* or great industrial trusts of Japan. It was founded in 1632 in Yedo (Tokyo), where the Mitsui family carried on business as *hake-ya*—agents who realized for the feudal overlords the tributes paid to them in kind, and managed their financial affairs, on a commission basis. The Mitsui trust embraced 91 corporations with an aggregate capital of 3,880 million yen; its activities included banking, international trade, manufacturing, mining, heavy industry, and paper and flour mills. It was liquidated in 1946 by order of the U.S. authorities.

**Mittelland Kanal.** Name of a German waterway described under Midland Canal.

**Mitylene or MYTILENE.** Island in the Aegean Sea, anciently called Lesbos. Lying S. of the Gulf of Adramyti (Edremid) and Asiatic Turkey, it covers 675 sq. m. It is mountainous, with two excellent harbours, the soil is fertile, and corn, olives, and vines are extensively cultivated. About 1100 B.C. it was occupied by Aeolian immigrants, and five centuries later, under its "tyrant" Pittacus, it became the centre of the civilization of the Aeolians of Asia Minor. Greek lyrical poetry arose in Lesbos, the birthplace of Alcaeus, Terpander, Sappho, and Erinna. Its most important towns were Mitylene and Methymna.

Mitylene was successively in the hands of Persians, Athenians, Mithradates, and the Romans. After the defeat of the Persians, it joined the Athenian naval league, but, having revolted, its territory was distributed among Athenian settlers. In the time of Alexander



Mitre. 1. Gothic. 2. Roman, with bands detached; two forms used in R.C. Church. 3. Anglican mitre By courtesy of Burns, Oates and Washbourne, and A. R. Mowbray & Co., Ltd.

form is smaller than that worn by bishops of the R.C. Church. The mitre of bishops of the Greek Church is a dome-shaped crown. See Tiara.

**Mitre.** In building and joinery, the line formed by the intersection or juncture, generally at a

it suffered severely from the Macedonians, and later from the Romans, as a punishment for having supported Mithradates. It was rebuilt by Pompey, soon recovered much of its prosperity, and was especially favoured by Tiberias and Nerva. In the 14th century the East Roman emperor, John Palaeologus, bestowed it upon a Genoese nobleman, by whose descendants it was held until its conquest by the Turks in 1462. In 1913 it was restored to Greece. In the Second Great War German troops occupied Mitylene without opposition on May 5, 1941, holding it until Sept., 1944. Pop. of island, 177,214; town, 27,870. *Pron.* Mitti-leeni.

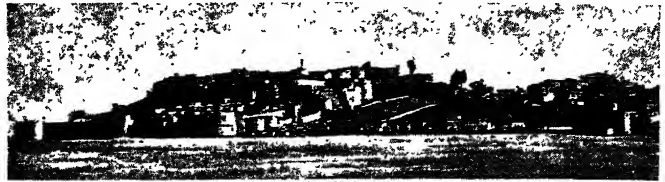
**Mivart**, St. GEORGE JACKSON (1827-1900). British scientist. He was born Nov. 30, 1827, and educated at Harrow, afterwards studying at King's College, London. After joining the R.C. Church he was called to the bar, but devoted himself to science and in 1862 became lecturer on anatomy at St. Mary's Hospital. In 1869 he was made F.R.S., and he was secretary of the Linnean Society, 1874-80. For three years he was a professor at Louvain. Writings on zoology brought him into touch with Darwin and Huxley. He did not wholly accept the Darwinian theory of evolution, yet certain articles led to his excommunication. He died April 1, 1900. Among his writings may be mentioned: *On the Genesis of Species*, 1871; *Man and Apes*, 1873; *The Cat*, 1881; *Nature and Thought*, 1882; *The Origin of Human Reason*, 1889; *Birds*, 1892.

**Mix**, Tom (1881-1940). American film actor. Born of mixed stock (including Celtic and Cherokee Indian), on a ranch at El Paso, Tex., Jan. 6, 1881, he was educated at Virginia military academy, and served as an army surgeon in the Spanish-



Tom Mix,  
American film actor

War. He was the star of many early "Western" pictures, in which he was always an adventurous cowboy, with his marvellously trained horse Tony. His first talking film, *Destry Rides Again*, was in 1932, but after appearing in *Rough Riding Romeo* he gave up the screen for the circus. He was killed in a car accident in Arizona, Oct. 12, 1940.



Mitylene, Aegean Sea. The town of Mitylene, on the east coast of the island, seen from the roadstead

**Mixtec**. American Indian tribe in Oaxaca, Guerrero, and Puebla, Mexico. They number some 150,000. Still progressive, they are descended from a pre-Spanish people who stood outside the Aztec confederacy. Their advanced culture and industrial art embodied both Mexican and Mayan characteristics. *See* Maya; Mexico.

**Mixture**. In chemistry, a term used to imply that the ingredients of a composition retain their individual properties. Sulphur and iron filings may be mixed together without chemical combination taking place, and the two ingredients can be separated by appropriate means. If, however, heat is applied to the mixture, the iron and sulphur combine chemically, and a new substance, iron sulphide, is formed, which possesses the characteristics of neither ingredient. The term mixture in pharmacy is applied to liquid medicines which either contain insoluble substances in suspension, or are composed of two or more liquids, with or without other matters in solution.

**Miyajima**. Sacred island of Japan in Hiroshima Bay, an arm of the Inland Sea. The island, also called Itsukushima, is counted as one of the three most celebrated sights in Japan, on account of its scenery and temples; it is 5 m. by 2½ m., and culminates in Misen, 1,800 ft. Miyajima town, pop. 4,000, on the N.W. coast, is connected by steam ferry with Miyajima station in Honshu, on the main line between Kobe and Shimonoeki. The temples were known in the 9th century, restored in the 12th century, and destroyed by fire and rebuilt several times since. About 40,000 pilgrims visit the island annually in normal times.

**Miyazu**. Town of Japan, in Honshu. Situated on Miyazu Bay, an arm of Wakasa Bay, on the N. coast, almost due N. of Osaka, it is a small port with trade in beans from the N.E. provs. of China. The neighbouring pine groves of Amano-hashidate are one of the famous sights of Japan. Pop. 10,000.

**Mizar**. Double star. Called alternatively Zeta Ursae Majoris, it

is composed of a star of the second magnitude with a fourth-magnitude companion 14 seconds of arc away. The components revolve round each other in 20 days 14 hours. They cannot be separated except in a telescope.

**Mizpah** or **Mizpeh** (Heb., a watch-tower). Ancient name of several high-lying places in Palestine. (1) The place, unidentified, where Jacob and Laban formed a compact (Gen. 31). (2) A region at the foot of Mt. Hermon (Josh. 11), probably near the Druse village of Mutelle. (3) Mizpeh of Gilead, the home of Jephthah. (4) A town fortified by Asa, and chosen as his residence by Gedaliah, governor of Jerusalem, after its capture, 586 B.C. It has been identified with Nebi Samwil, a mt. 2,935 ft. in alt., 4 m. N.W. of Jerusalem. It owes its present name (prophet Samuel) to a Muslim tradition which makes it the burial-place of Samuel (cf. 1 Sam. 7), and its mosque, formerly a Crusaders' church, contains a cenotaph revered as his tomb. The mt. was stormed by British troops in the First Great War, Nov. 21, 1917.

**Mizzen Mast**. In three-masted ships, the after mast. When there are four masts, all large, the after one is still called the mizzen, but if this last is small the masts are styled foremast, main mast, mizzen, and jigger.

**Mnemonics** (Gr. *mneumonikē*, art of memory). The art of improving the memory, especially by artificial aids and methods. Nearly all such methods depend upon the association of ideas, and they are chiefly based upon the principles of localisation and analogy. The former, topology, associates what is to be learnt with the picture of a building or place well known to the learner; the latter establishes an analogy between things or words and some familiar object.

Technical verses perhaps quite meaningless (like the Barbara, Celarent of the logicians), and the substitution for numbers of letters of the alphabet ( $1 = a, 2 = n$ ), which are made up into words and phrases, form another kind of aid. The art of memory is of very

ancient date, and was regularly cultivated in the Greco-Roman schools. The Greek poet Simonides, 6th century B.C., employed the topological method. In the Middle Ages Raymond Lully's Great Art was similarly arranged.

Attention is now directed rather to the psychological side of the question as likely to suggest means for the improvement of the memory. Purely mechanical systems are prejudicial to more scientific methods, although they may be usefully applied to lists of names and dates, and even to the learning of foreign words, by inserting an intermediate link in the shape of a word or words, recalling by association the two extremes. See Memory Training. *Pron. neomnionics.*

**Mnemosynē.** In Greek mythology, daughter of Uranus, and the personification of memory. By Zeus she was mother of the Muses.

**Moa.** Native name for the *Dinornis*, a genus of extinct flightless birds, which formerly inhabited New Zealand. About 20 species have been identified from their remains, the largest standing nearly 12 ft. high, the smallest being about the size of a turkey. They had apparently disappeared when European colonists arrived in New Zealand, but the state of

preservation of the eggs, feathers, and bones, which are found in abundance in Holocene deposits, suggests that the birds had not long been exterminated. They were unable to fly, but their long and powerful legs indicate that they could run with great speed. They had rounded, loosely constructed feathers, and their eggs were pale green.

**Moa.** Reconstruction of extinct wingless bird of New Zealand



**Moab.** Territory occupied in ancient times by the Moabites. It is an elevated tableland E. of the Dead Sea and lower Jordan valley, extending eastward to the Arabian desert. The river Arnon and other rivers flow westward through deep valleys. See Dead Sea; Palestine.

**Moabites.** An ancient Semitic people, closely related to the Hebrews. According to Gen. 19, they were descended from Moab, incestuously begotten by Lot. They were frequently at war with Israel and Judah, and were conquered by David. Ruth was a Moabitess. Solomon took Moabite wives, and introduced the worship of their national god Chemosh (*q.v.*) into Jerusalem. The Moabites recovered their independence, and Mesha, who set up the Moabite stone, won victories over Israel. Moab disappeared after the Babylonian conquest. See Palestine.

**Moabite Stone.** Black basalt slab from Dibon, Moab; discovered by Klein in 1868. International competition led to its



Moabite Stone. Ancient record of Moab's battles with Israel, dating from c. 850 B.C.

being shattered by its Beduin custodians. It was recovered for the Louvre, Paris, and its reconstruction was aided by paper squeezes secured by Clermont-Ganneau, covering 34 lines of primitive Hebrew script in the Moabite dialect of about 850 B.C. This inscription narrates Israel's conflict with Mesha.

**Moat.** Large trench round a fortified place for defensive purposes. The term is derived from the French *motte*, meaning an embankment and, in Norman-French, the ditch formed by the excavation necessary for providing the soil for such an embankment. Medieval castles were frequently provided with two moats, often filled with water, an inner one encircling the keep and an outer the precincts. By means of a moat the height of a battlement was considerably increased. See Bodiam Castle; Castle; Keep.

**Moawiya.** Caliph of Damascus 661-680, and founder of the Umayyad dynasty. Governor of Syria, he revolted against the caliph Ali, and after the murder of the latter

was proclaimed his successor. The dynasty lasted until 750.

**Mobile.** Bay and river of Alabama, U.S.A. The bay is formed by the Alabama and Tombigbee, which, after receiving the drainage of most of the state of Alabama, unite to flow S. to the Gulf of Mexico through an extensive delta of gum and cypress swamps. The Mobile is the W. and the Tensaw the E. of the five main distributaries which reach Mobile Bay, itself a part of the delta. Mobile river is 38 m. long; the bay is 27 m. long and 8 m. wide and less than 70 ft. deep. Mobile City is at the mouth of the river in the N.W. of the bay.

**Mobile.** City and seaport of Alabama, U.S.A., the co. seat of Mobile co. It is 135 m. E.N.E. of New Orleans, and is served by rlys. Its prominent buildings include the city hall, Battle House, and city and U.S. marine hospitals. The seat of a bishop, it has a fine Gothic cathedral and several educational institutions. Cotton, timber, resin, flour, cereals, coal, cotton-seed oil, and provisions are exported, and coffee, tropical fruits, asphalt, sisal grass, and potash imported.

Industries include saw-milling, shipbuilding, and the manufacture of cotton, veneers, and machine-shop products. There are important fisheries. Large harbour and dock improvements have been undertaken, and the port is visited by steamers from Europe, New York, Cuba, and South America. The original city was founded in 1702 by the French, the present city, farther S., being built nine years later. In 1704 the governor instituted the annual Mardi Gras festival which ends on Shrove Tuesday. Mobile was the capital of the French colony of Louisiana; was British, 1763-80; and Spanish, 1780-1813. It received a city charter in 1819, and was rechartered in 1887. Pop. 78,720.

**Mobilisation** (Lat. *mobilis*, movable). Process of bringing a navy, army, or air force to operational strength for war. In modern usage, the term includes organization of industry and industrial manpower to maintain and supply the fighting services; putting into operation civil defence measures; establishing economic and monetary controls; taking over by the government of sea, land, and air transport; and commandeering goods and services essential to military operations.

British mobilisation for the First Great War was carried out by



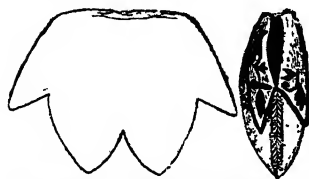
proclamation, the first day of mobilisation for the navy being Aug. 4, and for the army Aug. 5. Having retained reservists and ships called up previously for manoeuvres, the navy was in fact ready for active service by Aug. 3. The army completed its calling up of reservists and the issue of equipment from store by Aug. 10, and the British Expeditionary Force was ready to leave for France two days later.

General mobilisation of the Royal Navy for the Second Great War was ordered at 4.38 p.m. on Aug. 29, 1939, and completed on Aug. 31. Naval forces in home waters had been in a state of instant readiness for war since June 15, when reservists had been called up and the reserve fleet fully manned for exercises; on Aug. 23 the Admiralty had assumed control of all movements of merchant shipping. The general mobilisation of the army was ordered on Sept. 1; advance parties moved to France on Sept. 4; and one corps began to disembark on Sept. 10. Mobilisation of the R.A.F. was authorised on Sept. 1, and by Sept. 3 all stations were on a war footing. Civil defence services were mobilised and the black-out imposed on Sept. 1. There were no specific dates for the Axis powers' mobilisation, as they had been on a war basis, industrially and militarily, for at least 12 months.

At the time of the Munich Crisis (*q.v.*) the A.A. and coastal defence units of the Territorial army, the Observer Corps, and defensive units of the Auxiliary Air Force were called up on Sept. 26, and released Oct. 5, 1938. Mobilisation of the fleet took place Sept. 28, and was relaxed by stages.

In 1859, France required 37 days to mobilise 130,000 men and transport them to Italy; Prussia took 17 days to mobilise 400,000 and transport them to the French frontier in 1870; and in 1899 Great Britain occupied 13 days mobilising and embarking 40,000 men for South Africa.

**Moccasins**, or **MOCASSIN**. Shoe worn by the N. American Indians.



Moccasins. Pattern and made-up moccasin of one piece

Moccasins are made of soft deer skin, sometimes with raw hide soles added, but materials vary slightly in different parts of the country. The uppers are often embroidered with beadwork or decorated with porcupine quills, etc. See Boot and Shoe, colour plate.

**Moccasin** (*Natrix*). Name given to harmless snakes found in N.

America and also in the Old World. They are usually called water snakes, and should not be confused with the poisonous water moccasin (*Ancistrodon*).

**Mocha** or **МОКHA**.

Port in the Yemen, S.W. Arabia. About 60 m. N.N.W. of Cape Bab-el-Mandeb, it was formerly the centre of an immense trade in coffee, but a great part of its business has been transferred to Hodeida, farther up the coast of the Red Sea.



Mocking Bird. Cuban specimen of this N. American bird

heroic elements in them. Boileau's *Le Lutrin* was imitated and far surpassed by Pope in *The Rape of the Lock*, one of the wittiest examples of the mock heroic in English. See Poetry.

**Mocking Bird** (*Mimus polyglottus*).

Common bird of N. America, nearly related to the thrush, which it much resembles

in appearance. It gains its name from the facility with which it imitates the notes of other birds. It is found in the U.S.A. and the W. Indies, and is characterised by long tail, short wings, and whiteness of the underpart of the body. The wings and

tail are black, marked with white, and the bird, including tail, measures a little less than a foot. See Bird; Catbird.

**Mock Suns and Moons**. Optical phenomena often seen in conjunction with halos of the sun and moon. They are known meteorologically as parhelia and paraselenae respectively. Coloured or white images of the sun and moon appear on, or just outside, the ordinary halo ring, generally at the same elevation as the luminary. The images are due to the reflection and refraction of rays of light by ice crystals formed in the upper atmosphere. See Halo.

**Mòd** (Gael. from Old Norse, meeting or "moot"). Annual Gaelic festival. Meetings are held by An Comunn Gàidhealach, a society of Scottish Highlanders founded in 1891 to preserve and encourage the Gaelic language, music, etc., of Scotland. Competitions in singing, playing, etc., are held. The movement has spread so that local mòds are arranged independently. *Pron.* mode.

**Modder**. River of S. Africa. Rising near Dewetsdorp, about 40 m. S.E. of Bloemfontein, it flows N. and then W. through the Orange Free State, and entering Bechuanaland, discharges, after a course of 186 m., into the Vaal, near where the rly. crosses the latter on the way from Cape Town to Bulawayo.

The battle of Modder River on Nov. 28, 1899, was the third action of the S. African War fought by Lord Methuen in his attempt to relieve Kimberley. The British were surprised by a Boer contingent under de la Rey, and the advance held up until the Boer flank was turned by Gen. Pole-Carew. Methuen was badly wounded. The



Mock Sun. Pictorial diagram showing halos round the sun and mock suns at their intersections

**Mock Heroic Poetry**. Verse written in burlesque of the heroic in action or character. It deals with the general, parody being concerned with the particular. The earliest example is that of *The Battle of the Frogs and Mice*, at one time supposed to be by Homer, but probably rather intended as a burlesque of his *Iliad*. Chaucer's *Story of Sir Thopas*, in *The Canterbury Tales*, was written in mockery of the romances of the time. Beaumont and Fletcher in *The Knight of the Burning Pestle* dealt in stage mock heroes with the old romances, to which Cervantes at the same time was giving a death blow in *Don Quixote*. Butler's *Hudibras*, Dryden's *Macflecknoe*, and Pope's *Dunciad* are satires in mock heroic form. *The Rehearsal*, by Buckingham and others, and *The Critic*, by Sheridan, depend for their fun on the mock



Boer casualties were about 150, the British losses being nearly 400. *See* South African War.

**Mode.** Musical term of varied meaning. The Greek modes, and the modes of the Middle Ages which remained in use until about the middle of the 17th century, were concerned with the order of the tones and semitones in the octave scale, i.e. with the mode or manner of their arrangement.

The modes chiefly in use may be remembered in a rough and ready way by thinking of the white keys only of the pianoforte. The Ionian mode began on C, and was thus identical with our modern major scale; the Dorian on D; the Phrygian on E; the Lydian on F, the Mixolydian on G; the Aeolian on A, like the present descending melodic minor scale; and the Locrian—little used and hardly recognized by authorities—on B. Each of these normal or authentic modes had a plagal scale related to it, running from dominant to dominant of the authentic scale. Thus the Ionian mode was:



with dominant at G. The plagal form, called Hypoionian, was:



with dominant at E. *See* Gregorian Chant.

**Modelling.** Fashioning an article in some plastic substance, either in the round or in relief. Potter's clay in a fairly liquid state is the principal material used. During the progress of the work the moisture is preserved by sprinkling with water, and at night by wrapping the model in a wet sheet, or in a bag that will prevent the air affecting it. In figure sculpture in the round, various supports for the model are required. For a bust, a single upright, with a crossbar to carry the shoulders, will suffice. For the full figure, an iron upright, the height of the figure, is the mainstay of other supports for the limbs; this is fixed in a circular plinth, constructed to revolve on a wooden boss, so that the model can be turned round without the sculptor shifting his ground. Most of the work is done with the fingers. *See* Bronze Statuary; Plaster Cast; *consult* Modelling and Sculpture, A. Toft, 1905.

**Model Parliament.** Name given to the parliament summoned by Edward I in Nov., 1295. It consisted of the magnates, two knights

from every shire, and two burgesses from every considerable borough, and also representatives of the lower clergy. It was given its name because it was the model on which later parliaments were called, being representative of the nobles, clergy, and commons.

**Modena.** Duchy of Italy. It dates from 1452, when the city and the district around it, which since 1288 had been in the possession of the Este family, was made a duchy for Borso d'Este. During the Napoleonic wars the duchy became part of the Cisalpine republic. In 1814 it was given to Ferdinand, a member of the Hapsburg family, who had married Maria Beatrice, the heiress of the house of Este, and he and his son reigned until the latter was driven out in 1859. *See* Este.

**Modena.** Prov. of N. Italy, in Emilia. It stretches N.E. from the Tuscan Apennines to the Po valley. It is mountainous in the S.W., but in the fertile tracts it produces wheat, wine, and hemp. Goats and sheep are reared. Area, 1,003 sq. m. Pop. 373,000.

**Modena.** City of Italy, the capital of the prov. of Modena. It stands in a low and fertile plain, be-

library containing 140,000 vols. and several thousand MSS.; a town hall, dating in part from 1194; and museums and art galleries. There are several fine open spaces and recreation grounds. The manufactures include silks, woollens, linens, hats, and leather and iron ware, and there is trade in cattle, cereals, wine, fruit, and liqueurs. Pop., pre-war, 96,337.

A Roman colony from 183 B.C., Modena, then called Mutina, was besieged by Mark Antony in 43 B.C. Sacked by the Huns under Attila in 452, it was afterwards taken by the Lombards. In the 11th century it was the property of the marchioness of Tuscany, afterwards being for a short time a free city. It was acquired by the Este family in 1288, and was the capital of the duchy ruled by them until the foundation of the kingdom of Italy. The British 8th army took Modena from the Germans on April 24, 1945.

**Moderation.** Term used in the Presbyterian Church to denote the act of moderating, i.e. calling a minister. When a congregation meets with the local presbytery, under the presidency of the moderator, for the purpose of signing the

call to a minister-elect, the meeting is said to be a moderation. If the presbytery is satisfied that the congregation are unanimous, and that there is nothing against the personal character of the minister-elect, it grants a moderation to the people of that congregation to proceed with the call. *See* Presbyterianism.

### Moderator

(Lat. *moderari*, to

control). Name given to various academic and ecclesiastical officials. At Oxford university moderators are the examiners at the first public examination for degrees, commonly called moderations, abbreviated to mods. At Cambridge they are university officers who superintend the examinations for the mathematical tripos. At Dublin they are the candidates for the degree of B.A. who take first and second place in honours, and are called senior and junior moderators respectively.

The word is applied especially to the presiding officers at meetings



Modena, Italy. Crypt beneath the cathedral chancel, containing the tomb of S. Gemignano, the patron saint of the city

tween the Secchia and the Panaro, tributaries of the Po, and is 23 m. by rly. N.W. of Bologna, on the Aemilian Way. The splendid Romanesque cathedral, begun in 1099, has a lofty campanile and many curious carvings and statues. Other churches include S. Agostino with its memorials of the Este family. S. Pietro, S. Vincenzo, and others were damaged by air raids on May 13, 1944, and other occasions. The ducal palace (also hit), built early in the 17th century, is now used for public purposes. Among other buildings are the university, founded in 1683; a

and courts of the Presbyterian Church. Interim moderators are appointed by the local presbytery to fill a temporary vacancy in a church pending the appointment of a new minister. Moderators of local presbyteries hold office for a year, as also does the moderator of the General Assembly. In Scotland the Established Church, the United Free Church, and the Free Church each has its own moderator. Nine moderators were appointed in the Congregational Church of England and Wales from 1919, each appointed to a particular province; but they carry no authority over individual churches, their function consisting rather in influence, persuasion, and advice. See Presbyterianism; Church of Scotland; Congregationalism.

**Modernism.** Name given to a tendency of thought which came into prominence in the R.C. Church at the start of the 20th century and was condemned by Pius X in 1907. Modernism was made up of several elements; some were old and all were German. In religious philosophy modernists owed much to Kant and Schleiermacher; they were inclined to think that whether or not an historical event took place and was in that sense "true," it did not matter; what mattered was the practical consequences that came from believing it to be true. The "historical Jesus" might never have existed; the "Jesus of faith" was alone important, i.e. the experience of believing in Him. This idea was made fashionable by the popularity of pragmatism.

Since history could be bypassed in this way, modernists tended to take over the methods and spirit of German higher criticism of the Bible. This put all the emphasis on the "internal evidence" of books of the Bible, in which it was ready to find alleged contradictions and discrepancies. With such emphasis, almost inevitably criticism is controlled not by what the critic finds in his texts, but by what he brings to them as the assumptions of his arguments; and so Harnack, the greatest of all and a scholar, excluded many things simply because he believed that miracles could not happen, and naturally explained away any passage that reported them as having happened.

Similar criticism was performed by modernists on the history of dogma. They thought there could be in theology or religion no unchangeably true proposition, truth being rather in what a thing means

in the experience of a believer. This is what is meant by the claim of the modernists that Christian teaching was being brought by them into accord with the spirit of the age. (It follows that non-Christian religions, though perhaps incomplete, are just as "true" as the Christian; for what matters is the experience of their believers. Much, then, was made of comparative religion.)

From the R.C. Church, in which prominent modernists like Loisy and Tyrrell were excommunicated, the movement went deep into sections of the Church of England. The Modern Churchman represents what it there stood for. But now in the Church of England modernism is being repudiated and the philosophy behind it discredited; while its historical and critical methods are being rejected by greater accuracy and sounder scholarship.

**Bibliography.** Modernism: a Record and a Review, A. L. Lilley, 1908; Liberalism, Modernism, and Tradition, O. C. Quick, 1922; Father Tyrrell and the Modernist Movement, J. L. May, 1932; The Modernist Movement in the Roman Church, A. R. Vidler, 1934.

**Modern Painters.** Treatise on art by John Ruskin, published 1843-60. The work was begun as a defence of Turner's later manner, and gradually developed into a treatise on the principles of art, a rhapsody on the glories of nature, a panegyric on Tintoretto and the Florentine masters, and eventually a vehicle for conveying the author's views generally. The title was suggested by the publishers, Smith, Elder & Co., the author's own title having been Turner and the Ancients.

**Modern School.** Term used to denote a secondary school, i.e. for pupils aged 11 to 16, having a curriculum less academic than that of the traditional grammar school. Such schools were advocated in the report of the Hadow committee. Before the Education Act of 1944 most modern schools were administered under the regulations for elementary schools. In some areas they were called central schools; in others, selective central schools. A few had at least one group of pupils following an academic course in preparation for a certificate examination; but in most the curriculum was broader, and involved various types of arts and crafts, and group educational activities. See Secondary School.

**Modica.** Town of Sicily, in the prov. of Syracuse. It stands in the

Valdi Noto, 33 m. direct and 57 m. by rly. S.W. of Syracuse. The site of the Sicel city Motyka, it has remains of megalithic buildings. It is a centre for the trade in wine, oil, cattle, and fruit. Pop. 56,000.

**Modification.** A metallurgical phenomenon. It is of great value in the manufacture of light alloy components for aircraft. Aluminium alloys readily with silicon, and a group of alloys contains between 11 and 13 p.c. of the latter. If these alloys are cast normally, the metal has a coarse structure which makes it weak and liable to crack under shock. But if about 0.05 p.c. of sodium or of sodium fluoride be added to the molten alloy, the structure is found to be modified in the solid to a much finer grain, which makes the casting stronger and tougher. This alloy has application in cylinder blocks, crank-cases, and other parts of Diesel and internal combustion engines.

**Modigliani, AMEDEO** (1884-1920). Italian painter. Of Jewish origin, he was born in Leghorn, July 12, 1884, and studied at Florence Academy and in Rome. In 1906 he settled in Paris, where in Montmartre he was influenced by negro sculpture. A drunkard and drug addict, he lived in penury, but his personality attracted such painters and writers as Derain, Utrillo, Vlaminck, and Coteau. As a painter he did not exhibit until 1909, and he died Jan. 25, 1920. Sensitively observed, his portraits were notable for elongated proportions, restrained colour, and energetic grace. He is represented in Moscow, Detroit, London, and Zürich.

**Modjeska, HELENA** (1844-1909). Polish actress. Born at Cracow, Oct. 12, 1844, the daughter of a musician, she married an impresario, G. S. Modrzejewski, in 1861, and after playing some years on tour, made her début at Cracow in 1865. In 1868 she married



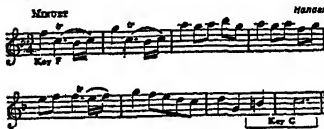
Helena Modjeska,  
Polish actress

Count Bozenta Chlapowski, with whom she went to America in 1876. She had already become famous in her rendering of Shakespearean heroines, and in 1877 she appeared at San Francisco, acting in English. In Great Britain she made successes as Mary Stuart, Lady Macbeth, and La Dame aux Camélias. She died at Bay City, Calif., April 9, 1909.

**Mödling.** Town of Austria. It is 8 m. S.S.W. of Vienna, at the entrance of the picturesque Brühl valley, and is a popular resort of the Viennese. It has the 15th century church of S. Othmar, and an agricultural school. Metal goods, boots and shoes are manufactured. Pop. 18,000. See Liechtenstein.

**Modoc.** American Indian tribe, known also as the Maklaks. Their home was in Oregon, and after the settlement of white men in that area there were sanguinary struggles between the two races. In 1852, and again in 1872-73, many of the Indians were killed. The few survivors live on the Klamath reservation in Oregon.

**Modulation.** In music, a change of key, or the passing from one scale of tonality to another. Thus, the following passes from key F to key C:



The same little piece afterwards touches the keys of D minor and G minor. When the modulations are to such related keys, they are called natural modulations; when a plunge is suddenly made to a more distant key, such as from F to B, the modulation is called extraneous. Chromatic modulation is when the change is effected by chromatic chords. Enharmonic modulation includes a chromatic or extraneous change, together with a substitution of notes, such as the key of B instead of C flat. (See Key.)

In radio, modulation refers to the method in which the signals representing sound waves are added to the high-frequency carrier wave. In amplitude modulation the wave form of the signal is reproduced as variations in the peak strength of the carrier wave. In frequency modulation (*q.v.*) it is the frequency itself of the carrier wave which varies with the signal (see Radio). Phase modulation has also been used in radio transmission, and sound signals have been conveyed by modulating either the duration or the position on a time scale of high-frequency radar pulses.

**Module.** Literally, a little measure. In architecture it is a unit of measurement used for determining the proportions of the various parts of a building; the unit varying according to the style of architecture. This system was

used by Vitruvius. The word is also used in hydraulics for measuring the flow of water. In prefabricated construction the module is the measurement on which the sizes of the structural units are based; *e.g.* a module of 4 ft. is a convenient width for wall, floor, and roof units, and a unit of 8 ft. (2 modules) suits the usual floor-to-ceiling height. In planning, a grid of module squares is invariably drawn to scale.

**Modulus.** Term used in mathematics and physics. In mathematics it is usually a constant multiplier or coefficient involved in a given function of a variable. In physics it is a constant which gives the ratio between the amount of physical effect and the force causing this effect, *e.g.* Young's modulus of elasticity. A modulus is the constant factor for converting from one system of units to another.

**Modus Vivendi** (Lat., way of living). Term applied to an informal agreement between the pope and a government for the regulation of R.C. ecclesiastical affairs in any country. This is a substitute for a concordat.

**Möen.** Island of Denmark. It lies in the Baltic, between Zealand and Falster. It has an irregular outline, and its picturesque limestone cliffs rise to 500 ft. Farming and fishing are the industries. Stege, a seaport on the N.W. coast, is the chief town. Area, 81 sq. m.

**Moeran, ERNEST JOHN** (b. 1894). British composer. Born at Heston, Middlesex, Dec. 31, 1894, he was educated at Uppingham and the R.C.M., studying composition under John Ireland. Moeran's family came from Ireland and he resided much in that country, his work being inspired by its folk idiom as well as a strong lyrical feeling. His 1st rhapsody was performed under Harty at Manchester in 1924. His larger works are a symphony in G minor, 1938; violin concerto, 1942; and cello concerto, 1945, written for and performed by his wife, Peers Coetmore.

**Moerdijk Bridges.** Two bridges across the Hollands Diep in the Netherlands. The rly. bridge, nearly a mile long, was constructed 1868-71; the road bridge,  $\frac{1}{2}$  m. long, 1933-37. They take their name from the village of

Moerdijk, which lies  $7\frac{1}{2}$  m. S.S.E. of Dordrecht on the S. side of this wide, sluggish channel (one of the outlets into which the Maas and the Waal drain) which separates the prov. of S. Holland from N. Brabant; they form the sole direct means of communication between the N. and the S. of the Netherlands. German parachutists seized them on May 10, 1940, and four days later German armour poured over them into "Fortress Holland," outflanking the water defences to the E.

When the Allies advanced into the Netherlands in 1944, the Germans blew up three spans of the rly. bridge and severely damaged the road bridge so that although Moerdijk village was liberated Nov. 8 by the 1st Polish armoured div., the Allied advance stopped there. After Germany's surrender and the liberation of the whole of the Netherlands, a temporary bridge carrying a single rly. track, and incorporating part of the (temporary) Waterloo bridge from London, was built and opened to traffic Sept., 1946, pending the rebuilding of permanent bridges.

**Moeris, LAKE.** Ancient name for a sheet of water in central Egypt, in the Fayum district. It formerly covered a considerable area. The portion still remaining is 34 m. long by 6 m. broad, and is known as the Birket-el-Kerun. Its embankment and partial reclamation were the work of Amenemhat III. On its banks was the celebrated Labyrinth described by Herodotus. See Labyrinth; Medinet-el-Fayum; consult The Fayum and Lake Moeris, Sir R. H. Brown, 1892.

**Moesia.** Prov. of the Roman empire. It roughly corresponded to the parts of Serbia and Bulgaria N. of the Balkan range. A Celtic land, it was conquered by the Romans 29-15 B.C., and by the invitation of the Emperor Valens was settled in A.D. 375 by Visi-Goths, who were thenceforth called Moeso-Goths. See Goths.

**Moeuvres.** Village of France, in the dept. of Pas-de-Calais. It is immediately E. of Boulton Wood and is memorable for two heroic episodes in the First Great War. Here in Nov., 1917, a company of the 13th Essex, surrounded by German forces, fought to the last man. It was also the scene of a stand by Corporal D. F. Hunter, V.C., and six men of the 1/5 batt. H.L.I. (52nd div.), in Sept., 1918. This party not only maintained their position but



E. J. Moeran,  
British composer

inflicted casualties on the enemy, and when Moeuvres was retaken by the British, regained their unit without loss.

**Moffat.** Police burgh and watering-place of Dumfriesshire, Scotland. It stands on the Annan, 63 m. S. by W. of Edinburgh, with a rly. station. It is a spa having mineral springs used by invalids since about 1750. These and beautiful scenery around attract many



Moffat Arms

visitors; the town, in fact, owes its origin to this spa. It has industrial activities. Pop. 2,006.

**Moffat, ROBERT** (1795-1883). Scottish missionary. Born at Ormiston, E. Lothian, Dec. 21, 1795, he worked as a gardener. Soon he offered his services to the London Missionary Society and in 1816 went out to S. Africa. He stayed in that country until 1870, travelling about and in different to danger, introducing Christianity and civilization to the natives. He translated the Bible into the language of the Bechuana, and wrote *Missionary Labours and Scenes in S. Africa*, 1842. In 1819 he married Mary Smith (1795-1870), who was also devoted to the work, and their daughter became the wife of David Livingstone. Moffat died at Leigh, Kent, Aug. 9, 1883.



Robert Moffat

**Moffatt, JAMES** (1870-1944). Scottish divine. Born in Glasgow, July 4, 1870, he was educated at the academy and university there. Ordained in 1896, he delivered the Jowett lectures in 1907, and during 1911-15 was Yates professor of Greek and N.T. exegesis



James Moffatt, Scottish divine

at Mansfield College, Oxford. From 1927 to 1939 he was professor of church history in the United Theological Seminary, N.Y. Moffatt is best known as a translator of the Bible; he revised his earlier version of the N.T. in 1924, and made a similar version of the O.T. His work was criticised



Moffat, Dumfriesshire. General view of the town from the west

for its colloquialisms and use of the Scottish vernacular. An Introduction to the Literature of the N.T. has become a standard book. Moffatt died June 27, 1944.

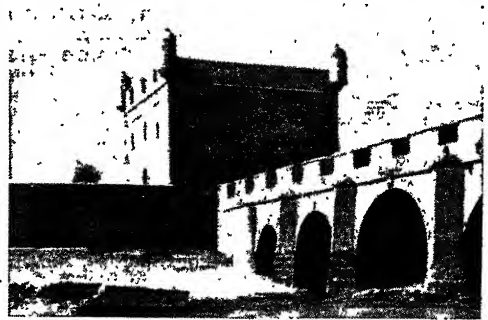
**Mofussil.** Anglo-Indian term meaning the provinces. It is applied to the country stations and districts, or the rural parts of a district, as distinct respectively from the presidency or the chief station. It comes from Arabic *mu-fassal* (separate, particular, hence provincial).

**Mogadishu** (Ital. Mogadiscio). Seaport of Italian Somaliland. Situated 270 m. N.E. of the mouth of Juba river, it is connected by a short rly. with Afgoi in the interior, and was the administrative centre of the Somali territories under Italian rule. Developed into a naval and military base by the Italians, it was strongly garrisoned when Italy entered the Second Great War. Bombed from the air on several occasions during 1940, and bombarded by light forces of the Royal Navy, Nov. 17, it was captured by British Imperial troops on Feb. 25, 1941, and became an important supply base for the subsequent conquest of Italian E. Africa; it also remained the centre for British administration of (Italian) Somaliland, developing on some scale the manufacture of soap, margarine, buttons, bricks, boot polish, pottery, glass, beer, and tinned foods.

Mogadishu was the scene, Jan. 13, 1948, of serious rioting, resulting in 67 casualties, 52 of them Italian, between members of the Somali Youth league, demanding an independent Somaliland, and Italian colonists, disturbances coinciding with the presence of the four-power commission considering the disposal of former

Italian colonies. Pop. 55,000, of whom 8,000 are Italian. See East Africa Campaign; Italy; Somaliland.

**Mogador** OR ES SUEIRA. Seaport of Morocco. It is 130 m. from Marrakesh. With a good harbour, it does a considerable trade, exporting the produce of the land. It was founded in 1760, and its



Mogador, Morocco. City water tower and aqueduct

chief building is the citadel. Pop. 32,000.

**Mogilev.** A town of White Russia S.S.R. It is on the Dnieper, about 100 m. E. of Minsk, and is built on both banks of the river. It has rly. connexion with Moscow, and its industries include smelting, leather, and tobacco manufactures. It trades in corn, sugar, and fish from the south. In the 15th century, the Polish kings claimed it; it surrendered to Russia in 1654, but was taken by the Swedes at the beginning of the 18th century. It was annexed by Russia in 1772. Mogilev was for long famous for its two cathedrals, one for the Roman Catholics, and the other, built in 1780 by Catherine II of Russia and Joseph II of Austria. During the Napoleonic invasion Bagration's forces were defeated near here in 1812. The Germans occupied Mogilev early in July, 1941, the Russians recaptured it, June 28, 1944. Pop. 99,440.

**Mogilev-Podolski.** Town of the Ukrainian S.S.R. about 200 m. N.W. of Odessa. It is situated on the left bank of the Dniester,

and was founded about 1690; it developed rapidly, and was annexed from the Poles by Russia in 1795. The town is near the former frontier of Bessarabia, and until the Second Great War traded in cereals, flax, timber, and dried fruits. It was captured by German and Rumanian forces early in July, 1941, and recaptured by the Russians, March 20, 1944.

**Mogul** (Arab. *mughal*, Mongol). Name applied to the empire founded c. 1526, by Babar (*q.v.*), the Mahomedan conqueror of India. Under his grandson Akbar (1542-1605) the empire was greatly extended. On the death of Aurungzebe (1707) it fell to pieces, and in 1858 it finally ceased to exist. See Akbar; Babar; India.

**Mohacs.** Town of Hungary. It is situated on the right bank of the Danube, 40 m. E. of Pecs, and is a rly. junction and a steamer station with some trade in coal. It has manufactures of silk, timber, and bricks. Pop. 17,228.

Mohacs is best known as the scene of two battles. The first, Aug. 29, 1526, was the defeat of Louis II (*q.v.*) of Hungary by Soliman the Magnificent, when of the whole Hungarian force of 25,000 men, 24,000 fell on the field, including Louis himself. This defeat left the road open to Buda, which was entered and sacked by the Turks, Sept. 12. The second battle, Aug. 12, 1687, saw the defeat of the Turks by the Austrian army of Charles of Lorraine, and was one of the decisive battles in the campaign which eventually drove the Turks out of Christian Europe. Mohacs was captured from German and Hungarian troops by units of the Russians, Nov. 29, 1944. Pron. Mo-hatch.

**Mohair** (Arab. *mukhayyar*, choice, select). Fleece of the Angora goat. Mohair has been imported from Turkey since the 17th century at least, when it was used for making camlets for cloaks. Gimp, fancy buttons, and button-holes were made of mohair twist, hair for the purpose being brought over in the form of spun yarn. Mohair spinning has been carried on in Bradford, Yorkshire, on a large scale since 1848. The better qualities are taken for dress goods, and others are made into plushes, braids, astrakhans, and heavy cloths. Turkey mohair normally commands the best prices, but there are at the Cape three times as many Angora goats as in Asia Minor. Cape kids from the young of the South African goats is the finest procurable hair. Angora

goat ranching has extended much in the western U.S.A., and the manufacture of mohair goods has largely increased in America. See Angora; Wool.

**Mohammed.** Name, a variant of Mahomet, of six sultans of Turkey. The two most important (II and V) are separately noticed.

Mohammed I reigned 1413-21. By constant warfare he recovered territories lost by his father, Bayazid, who had been overwhelmed by the forces of Timur. This sultan appears to have been a man of culture. The reign of Mohammed III, 1595-1603, was mainly taken up in fighting against Austria, but before its end he was involved in a war with Persia, and had to contend with an insurrection in Constantinople. Mohammed IV reigned during 1648-87. This was the period when the Kuprili family was directing the affairs of Turkey, and during the reign war was carried on with Austria and Poland.

Mohammed VI became sultan in 1918. Born Jan. 12, 1861, he was the son of sultan Abdul Medjid, and the brother of Mohammed V, whom he succeeded July 3, 1918. He was deposed Nov., 1922 and died at San Remo, May 15, 1926.

**Mohammed II** (1430-81). Sultan of Turkey, known as Mohammed the Conqueror (El Fātyh). Son of Murad II, he was born at Adrianople, and succeeded his father in 1451. In 1453, at the head of over 150,000 men and a fleet of 400 vessels, he captured Constantinople from the Greek emperor, Constantine Palaeologus, after a siege of 53 days. Making Constantinople his capital, he embarked on a long series of wars. He subdued Serbia in 1459, in spite of his memorable defeat at Belgrade by Hunyadi, 1456, made himself master of the Morea, 1460, of Trebizond, 1461, of Lesbos, 1462, and of Wallachia and Bosnia, 1463. In 1472 he overcame the Persian forces in Cappadocia, and took Caffa in the Crimea from the Genoese in 1475. In 1478 he forced Venice to sign peace and surrender Skutari in Albania, and in 1480 he attacked the Neapolitans and captured Otranto. Shortly afterwards he died at Gebze, and was succeeded by Bayazid II. See Turkey: History.



Mohammed V.  
Sultan of Turkey

**Mohammed V** OR MEHMET RESHAD (1844-1918). Sultan of Turkey. Born November 3, 1844, younger brother of Sultan Abdul Hamid II (*q.v.*) he lived in dull and isolated obscurity most of his life. A student and deeply religious, he only emerged into prominence on the deposition of Abdul Hamid on April 27, 1909, on which day he was proclaimed his successor. He succeeded to a heritage of misgovernment, and throughout his reign was a mere figurehead, the real power being in the hands of the Young Turk party, headed by Enver Pasha, Talaat Bey, and others. The Italian and Balkan wars and the increasing influence of Germany in Turkish affairs were troubles with which he had to contend. He is believed to have been by no means willing to side with Germany in the First Great War, and for a while did what he could to avoid a rupture with the Allies, but was overruled. He died July 3, 1918, and was succeeded by his brother, Mohammed VI. See Turkey.

**Mohammed Riza Shah Pahlavi** (b. 1919). Persian ruler. Son of Riza Shah Pahlavi, he was born Oct. 27, 1919, and in 1939 married Fawzieh, the sister of King Farouk of Egypt, divorcing her 1948. He succeeded to the throne on his father's abdication, Sept. 16, 1941.



Mohammed Riza,  
Persian ruler

**Mohammed Zahir Shah** (b. 1914). King of Afghanistan. Born in Kabul, he was educated in



Mohammed Zahir,  
King of Afghanistan

France and at the Infantry Officers' College in Kabul. He married his cousin Umairah in 1931. In 1932 minister of war and of education, he ascended the throne on the assassination of his father, Mohammed Nadir Shah, Nov. 8, 1933.

**Mohammerah.** This Persian seaport is more frequently known as Khorramshahr (*q.v.*).

**Moharram** OR MUHARRAM (Arab., sacred). First month of the Mahomedan year; also a religious celebration during that month. The celebration is observed by Shiites as a time of mourning and



fasting to commemorate the martyrdom of Hasan and Hussein, grandsons of Mahomet. A miracle play is performed on the anniversary of the death of Hussein. In India the Moharrem ceremonies are observed by both Sunnites and Shiites, and also by Hindus, especially Marathas, as a festival of rejoicing rather than of mourning.

**Mohawks** (Narraganset, man-eaters). North American Indian tribe of Iroquoian stock. Formerly one of the Six Nations, their location between the St. Lawrence and the Catskills led to early trade relations with the Dutch (1614), who exchanged firearms for pelts. They ultimately migrated to Canada, and in 1916 they exceeded 5,000.

**Mohawks on Mohocks.** London fraternity of dissolute young men of fashion in the early 18th century, the name being adopted from the Mohawk tribe. They were the successors of the so-called "scourers," and their favourite exploits were beating the watch, slitting noses, and rolling women in barrels down Snow Hill. The Tories endeavoured to saddle the Whigs with the Mohawks' delinquencies; in his *Journal* to Stella Dean Swift says: "They are all Whigs." A royal proclamation was issued against them, March 18, 1712.

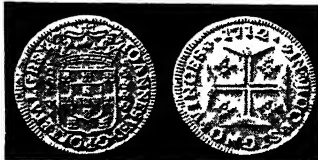
**Mohenjodaro.** Ancient city in the Indus valley (Sind) whose excavation has revealed a civilization of c. 3300-2700 B.C., contemporary with and related to that of early Sumeria. See India.

**Mohicans.** Name popularly applied to a N. American Indian tribe, officially called Mahicans. An allied tribe are called Mohegans (wolf). Of Algonquian stock, the Mahicans moved from the Hudson valley into Pennsylvania, the Mohegans northward into New England. Both tribes are extinct. They lived in communal bark-houses, and their villages were frequently stockaded. The men wore feather mantles, and the women wampum (*q.v.*).

**Mohl, Hugo von** (1805-1872). German botanist. Born at Stuttgart on April 8, 1805, he was educated at Tübingen and Munich and became professor of botany at Tübingen in 1832, holding the position for 40 years. His researches into histology led him to suggest the word protoplasm and to describe the behaviour of protoplasm in cell-division. He was the true founder of the cell theory. His important *Die Vegetabilische Zelle* appeared in 1851, being translated into English in 1852. He died April 1, 1872.

**Mohmands.** Tribesmen inhabiting the country north of the Kabul river south of Bajaur on the N.W. frontier of Pakistan. The Durand line which divided India from Afghanistan passed through the country of the Mohmands, who received special assurances that they should not suffer from the separation from Afghanistan. That did not prevent the Mohmands from giving considerable trouble four years later (1897), when a general outbreak on the frontier made them fear annexation. They joined with their neighbours the Afridis and Swatis in attacks on administered territory. In this campaign Winston Churchill, as the correspondent of the *Daily Telegraph* and *Pioneer* (India), won his journalistic spurs (The Malakand Campaign). The tale of expeditions against the Mohmands goes back, however, to East India Company days, for the first took place in 1851-52; others were in 1854, 1864, 1879, and 1880. The Mohmand's economic existence is precarious, as the crops grown are dependent on adequate rainfall, which is not always to be depended on. The population of Mohmand tribes on the Pakistan side of the Durand line is about 100,000, of whom 30,000 are fighting men. Area about 1,100 sq. miles.

**Möhne Dam.** Structure on the Möhne river, Westphalia, Germany. Constructed to supply water to German industry in the Ruhr, and to canals and hydro-electric generator stations, the dam was about 850 yds. long, measured 140 ft. alike in thickness and height, and was built of solid concrete. It retained 140,000,000 tons of water. On May 17, 1943, it was attacked and breached by R.A.F. bombers carrying special mines. The Eder dam was also breached the same night (the third dam attacked, the Sorpe, was not); the released waters swamped vast areas of land, and flooded factories, railways, power stations, and towns, Kassel being inundated. The destruction of the dams was part of the plan to paralyse the heavy industries of the Ruhr by air attack. See Air Photography, illus. p. 209.



Moidore. Obverse and reverse of the Portuguese coin,  $\frac{1}{2}$  actual size

**Mohs Scale.** Mineralogical scale determining hardness by comparison with a standard set of minerals. It is as follows:

Hardness	Standard Mineral
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Orthoclase
7	Quartz
8	Topaz
9	Corundum
10	Diamond

As an example, galena (hardness 2.5) scratches gypsum (hardness 2) but is scratched by calcite (hardness 3). The difference in hardness between any two minerals of the Mohs Scale is not claimed to be in any way constant. The scale was first introduced in 1820 by a German mineralogist, Friedrich Mohs (1773-1839).

**Mohun, Baron.** Irish title borne from 1628 to 1712 by the family of Mohun. John Mohun (c. 1592-1640) was the first holder, but the best known is Charles Mohun, the 4th (c. 1675-1712). A son of the 3rd baron, he soon became known for his riotous conduct. In 1692 he helped



4th Baron Mohun, Irish peer After Kneller

a friend, Richard Hill, in an attempt to carry off the actress, Mrs. Bracegirdle, this leading to a scuffle between him and William Mountfort, the actor, in which the latter was killed. Mohun was tried by his peers and acquitted, pleading that he killed his man in fair fight, and in 1699 he was similarly relieved from a charge of murder. On Nov. 15, 1712, he fought a duel in Hyde Park with the 4th duke of Hamilton and both were killed, an incident immortalised in Thackeray's Henry Esmond. The barony thereupon became extinct.

**Moi.** Annamese collective name for aboriginal hill-tribes in French Indo-China. Estimated at 600,000, they display some ethnic admixture on the fringes of their upland habitat, but are essentially long-headed, level-eyed Indonesians, with a primitive social organization and animistic beliefs based on spirit-worship and witchcraft. See Asia; Kha.

**Moidore** (Port. *moeda d'ouro*, money of gold). Obsolete Portuguese gold coin. Valued at 4,800 reis, or a little over a guinea nominally, it was not minted after 1732. The coin was also known as the

lisbonine, and was in use in many countries of W. Europe.

**Moine Series.** A group of rocks named after A' Mhoine in Sutherland and covering most of Scotland N. of the Great Glen, as well as parts of Inverness, Perth, and Argyll to the S. of it. The rocks are probably Pre-Cambrian in age, and may be equivalent to the Torridonian sandstones of the N.W. coast. The Moines are dominantly metamorphosed sediments, once sandstones and shales, but now granulites and schists. Their origin is obscure, but they may be altered beds of volcanic ashes. The relationship of the Moines to other Pre-Cambrian rocks in Scotland and the age of their metamorphism are still matters of considerable controversy. See Geology; Rocks; Pre-Cambrian.

**Moine Thrust.** In geology, a great thrust fault which runs nearly parallel to the N.W. coast of Scotland from Loch Erriboll to Sleat in Skye, and probably thence to the Sound of Iona and to Islay. The thrust zone was formed during the Caledonian mountain building movements of post-Silurian age. It carries metamorphosed rocks of the Moine series (*q.v.*) W.N.W. over Cambrian, Torridonian, and Lewisian rocks. The thrust dips gently E.S.E., and the movements on it were locally at least 10 miles. It was the first great thrust zone to be recognized and described in detail. See Fault; Geology.

**Moir, DAVID MACBETH** (1798-1851). Scottish humorist. He was born at Musselburgh, Jan. 5,



David Moir,  
Scottish humorist

1798, and spent his life there engaged in medical practice. Over the signature Delta he contributed much verse to Blackwood's Magazine. He is remembered chiefly by his Autobiography of Mansie Wauch, a picture of humble Scottish life. Moir died July 6, 1851.

**Moirai.** In classical mythology, Greek name for the Fates, goddesses who presided over the destiny of man. The Latin name for them was Parcae. See Fates.

**Moiré** (Fr., watered). Term applied to fabrics bearing an irregular wavy or jagged figure produced in cloth finishing. This watered effect is the same that is seen when two layers of light cloth

are superimposed. The permanent watered or moiré effect is obtained by the use of water and pressure. The cloth is laid in layers, and an impression of the back of one layer is made on the face of the next. Silk fabrics so treated are generally named moirés, worsted fabrics moreens, and cotton fabrics moirettes. The perfection of the result is judged by the size of the figures.

**Moiseiwitsch, BENNO** (b. 1890). Russian-born British pianist. Born of Jewish stock at Odessa, Russia,



B. Moiseiwitsch,  
Russian-born  
British pianist

Feb. 22, 1890, he studied at the Imperial School of Music there (where he won the Rubenstein prize at the age of 9) and later under Leschetitzky in Vienna. Coming to England, he made his début as a concert pianist at Queen's Hall in 1909, and was an immediate success. An executant of great power and brilliant interpretative ability, especially associated with the works of his friend Rachmaninov, he made repeated world tours and became a naturalized British subject in 1937.

**Moissac.** Town of France, in the dept. of Tarn-et-Garonne. It lies on the right bank of the Tarn, 17 m. by rly. W.N.W. of Montauban on the important Canal Latéral, and is a centre of local agricultural and wine trade. The S. portal of the ancient church of S. Pierre is a remarkable example of 12th century Gothic sculpture. The adjoining cloister, built c. 1100, is also part of the remains of a famous abbey, founded in the 7th century, affiliated to the order of Cluny in the 11th, and suppressed during the Revolution. Pop. 8,700.

**Moissan, HENRI** (1852-1907). French chemist. He was born in Paris, Sept. 28, 1852, and in 1889 was professor of mineral chemistry, at the school of pharmacy. In 1900 appointed professor of chemistry at the Sorbonne, he was awarded the Nobel prize for chemistry in 1906. He died in Paris, Feb. 20, 1907.

Moissan is famous for his work on fluorine and the production



Henri Moissan,  
French chemist

of artificial diamonds by the sudden cooling of a molten iron mass containing dissolved carbon. This latter discovery caused a great sensation at the time, but the diamonds produced by this method have never been commercially successful. Moissan was also responsible for an improved method of acetylene production.

**Moivre, ABRAHAM DE** (1667-1754). Anglo-French mathematician. Born May 26, 1667, at Vitry in Champagne, he came to England, 1688, and remained there for the rest of his life. He became a personal friend of Sir Isaac Newton, to whom he owed much of his mathematical training. De Moivre was made a fellow of the Royal Society in 1697. His chief title to fame is a theorem in trigonometry which opened up a large branch of mathematics, and which still bears his name. His book *The Doctrine of Chances*, first published in 1718, was for long a classic. He died Nov. 27, 1754, in London. See Trigonometry.

**Mojaisk.** Town of R.S.F.S.R. in Moscow region. It is about 65 m. S.W. of Moscow, at the confluence of the Petrovka and Moskova rivers. Of strategical importance, it was founded in the 13th century; Ivan the Terrible built a fortress here in 1541.

In the Second Great War it was one of the key-towns to the Russian capital. Having captured it in 1941, the Germans converted Mojaisk into a bastion with three general lines of defence. With the recapture of the town by the Russians, Jan. 19, 1942, the German threat to Moscow was virtually ended.

**Moji.** Seaport and town of Japan, in Kyushu. It is in the N.E. of the island on the Strait of Shimonoseki, at the entrance to the Inland Sea. The chief export is coal; others of minor importance are cotton thread, refined sugar, cement, and timber. Ginned cotton, raw sugar, petroleum, and bean cake are imported. The port became important in 1887, when it was made the terminus of the Kyushu rly. Its pop. has increased from 3,000 in 1889 to 121,611; its growth was greatly stimulated by the increase of traffic due to the war operations of 1894-95, 1900, and 1904-05, and by increased trade in the 1920s.

**Mojos.** Spanish name for a South American Indian tribe of Arawakan speech, between the Beni and Guapore rivers, Bolivia. Numbering about 30,000, they devote more attention than the

neighbouring Chiquitos to hunting and fishing, and have partly abandoned bows and arrows for the lasso. Best of Amazonian boatmen, their dug-outs are prepared with the aid of fire. They use lip-pendant ornaments of quartz or resin-filled canes. *Pron. Mohos. See American Indians.*

**Mokume** (Jap., wood grain). Name given to an art metal product made by soldering together, one upon the other, thin sheets of gold and silver, and of certain copper alloys which have been "pickled" to give them various prominent colours. Conical holes are drilled into the surface of the soldered mass through the sheets, and grooves are cut in the surface to various depths. The mass is then hammered out until the holes or grooves have disappeared, the final product being a variegated surface suggesting a slab of finely grained and polished wood.

**Mola**, Emilio (1887-1937). Spanish soldier. He was born in Cuba. In 1926 he became chief of the colonial forces in Morocco, being appointed director-general of the Spanish police five years later. In 1935 he returned to his former post in Morocco, but was dismissed in 1936 by a Left government. He was in virtual exile until the outbreak of the Civil War when he led the insurgent troops into Spain from Morocco with Gen. Franco. He was second-in-command to Franco and was killed in an aeroplane accident on June 3, 1937. *See Spanish Civil War.*

**Mola di Bari** (anc. *Turres Julianae*). Harbour of Italy, in the prov. of Bari. It stands on the Adriatic, 12 m. by rly. S.E. of Bari. Cattle, grain, wine, and oil are exported. Pop. 14,000.

**Molasse**. In geology, name given to a group of coarse sand and gravel deposits occurring N. of the Alps in Switzerland. They were derived by erosion from the rising mountain chain as it was uplifted, and are mostly of fresh water origin, but some marine deposits also occur in them. They are of Oligocene and Miocene age.

**Molasses**. The thick mother liquor remaining after the removal of all the crystallisable sugar at the refinery. In countries such as Jamaica, where rum is an important item in production, its disposal presents no difficulty, but elsewhere the problem is more complex for, though on fermentation and distillation it yields alcohol, this is not generally economical. Generally molasses contains about 50 p.c. sugars and

by special chemical treatments a further yield of pure sugar can be obtained. In the U.S.A. molasses is the name for treacle.

**Molay**, Jacques Bernard de (c. 1243-1314). A French grand master of the order of the Templars. Born at Molay, in the Juras, he entered the Templars at Beaune about 1265 and early distinguished himself in Palestine. Elected grand master in 1298, he retired with the Templars to Cyprus in 1299 until summoned to France by Pope Clement V in 1306. On Oct. 13, 1307, he was arrested with all the members of his order in France by order of Philip the Fair. Put to the torture, he confessed the truth of certain serious allegations against the Templars, and spent several years in prison before being brought up for sentence. He then recanted his confession, and with a colleague, Gaufrid de Charney, was condemned as a heretic and burnt at the stake, March 18, 1314. His death marked the end of the military orders which gave so much temporal power to the papacy. *See Knights Templar.*

**Mold**. Urban dist. and market town of Flintshire, Wales; also the county town. It is 13 m. W. by S. of Chester, stands on the Alyn, and is served by rly. The chief buildings are S. Mary's church, the county buildings, town hall, and library. The town had a castle in the Middle Ages, and earlier there was a Roman camp here on a hill, now called Bailey Hill. Market days, Wed. and Sat. Pop. 6,200.

**Moldau**. River of Czecho-Slovakia, also called Vltava (*q.v.*).

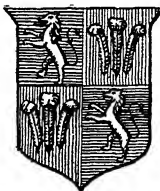
**Moldavia**. Soviet Socialist republic. It was established on Aug. 2, 1940, by a union of part of Moldavia A.S.S.R. (formerly included in Ukraine S.S.R.), and the Bessarabian territories returned to Russia by Rumania on June 28. It is bounded on the W. by the Prut, the dividing line between it and Rumania, E. and N. by Ukraine, S. by the Black Sea. With area 13,200 sq. m., it has 12 regions, and Kishinev is the capital.

Moldavia has a mild climate, fertile soil, and is predominantly agricultural, the crops being wheat, maize, sugar beet, fruit, and tobacco. It was noted from tsarist times for orchards and vineyards.

It has woodworking, machinery, clothing, and tanning industries; but considerable lignite, gypsum, and phosphorite deposits are unexploited. Principal communications are by road and along some 400 m. of waterway on the Dniester, which provides power for electricity generating stations. In the Second Great War Moldavia was invaded and occupied by German and Rumanian troops. The Bessarabian regions were incorporated with Rumania, but were returned to Russia when Soviet armies liberated the republic in March, 1944. Pop. 2,200,000.

**Moldavia**, or **Moldova**. Historically, a district of Rumania. It is of elongated shape. Wallachia, Transylvania, and the Bukovina bound it on the W. and Bessarabia on the E. The Carpathians on the W. are its most striking natural feature, and its rivers, the chief of which is the Sereth, descend from them in high terraces to the river Prut. Jassy is the capital, and other large towns are Botosani and Bacau. Moldavia covers about 14,700 sq. m. and supports a pop. over 2,000,000.

In the 13th and 14th centuries Moldavia, which takes its name from the Moldava, a tributary of the Sereth, was independent; and under Alexander the Wise and Stephen the Great it flourished in the 15th century, the latter prince defeating a powerful combination of Poles, Magyars, and Turks at Rahova in 1457. Conquered by the



Mold arms



Mold, Flintshire. Ruins of the medieval castle

Turks in 1611, it was farmed out by them to the Greek Phanariote princes, who had a certain measure of independence. Partly through the efforts of Russia, Moldavia and Wallachia were liberated from the Turkish yoke in the 19th century.

Their union under the name of Rumania was proclaimed at Jassy and Bukarest, Dec. 23, 1861, but they had been virtually united two years before under Col. Cuza, later styled Alexander I, who had been elected hospodar or prince of Moldavia and Wallachia. In the First Great War the Rumanians, sup-

ported by the Russians, successfully defended Moldavia in 1916-17 against the Austro-Germans. Much of the country was devastated by the contending Soviet and Axis armies in the Second Great War. In its final drive to clear the province of German troops, the Red Army secured a bridgehead W. of the Prut in April 1944, but bitter fighting ensued before Jassy surrendered to Malinovsky's 2nd Ukrainian army in Aug. Frontier adjustments fixed the Prut as the E. boundary of Moldavia and made this prov. the most easterly of Rumania.

**Molde.** Seaport of Norway, in Møre co., 20 m. N.W. of Aandalsnes at the entrance to Romsdals Fjord. It has a good harbour and trades in timber, tar, and fish. During the Second Great War King Haakon VII with the Norwegian royal family and ministers embarked here for Great Britain, June 10, 1940. The Germans bombed the town and caused considerable damage.

**Mole.** Pigmented spot on the skin, usually raised, and covered with hair. Removal involves surgical or electrical treatment. Some moles tend to malignant change in later life.

**Mole.** Name given to a large, widely distributed family of insectivorous mammals (*Talpidae*).



Mole. Specimen of the common European variety

The European mole (*Talpa europaea*), common in Great Britain, is about 6 ins. in length and covered with velvety greyish-black fur. The hairs are set vertically in the skin, a distinct advantage to a burrowing animal, as they will lie in any direction; the body is rounded, and the fore limbs are short and provided with singularly long and strong claws. The forward position and the paddle-like action of these limbs make them powerful digging instruments. The nose is pointed, the eyes very small, and the external ears absent. A curious skeletal feature of this animal is the breastbone, which is keeled somewhat like that of a bird, and extended so far forward and upward as to involve the collar bones. The muscular development of the mole is remarkable for so small an animal.

The mole spends practically all its life underground, burrowing not far below the surface in search of the worms and grubs on which it feeds. The small heaps on the lawn are not the homes of the animal, but simply the mould cast out in the course of burrowing, whence its popular name, mould-warp, earth caster. The hill or nursery of a mole is much larger, and usually constructed in an open field, but always near to a water supply. It consists of a central chamber a few inches below the surface, often surrounded by several galleries and tunnels. The nest chamber is lined with grass and leaves, and is apparently used only once. One litter is produced in the year, usually numbering three or four young ones, born in May or June.

Feeding entirely on worms, grubs, and insects, the mole is harmless and useful to the agriculturist. But it does a certain amount of damage in burrowing among newly-sown seed, and mole casts are both unsightly and inconvenient in fields and gardens, with the result that in most districts the mole is relentlessly trapped. See Mole Shrew.

**Mole** (Lat. *moles*, mass). Jetty projecting from the land into water and serving as a pier, or as a pier and breakwater combined. It follows that the top surface must be formed to accommodate traffic, and that at least for a portion of its length boats may moor or berth alongside for loading or discharging cargoes.

The terms mole and pier are sometimes used indiscriminately, but strictly speaking the former is of solid construction. The construction of moles follows that of certain types of breakwaters.

A harbour may be formed by constructing two moles, the outer ends of which approach each other, leaving a sufficient opening for the safe passage of vessels in and out; in other cases a single mole may serve the purpose. Moles are sometimes constructed with the storm side at a high level and the lee side at a lower level, so as to provide shelter and berthing accommodation for vessels free from the effect of breakers. See Breakwater; Harbour.

**Mole.** River of England. It rises in Balcombe forest, N. Sussex, and flows 30 m. through Surrey to the Thames near Molesey. It flows through the Dorking Gap in the N. Downs between Dorking and Leatherhead, near which in dry seasons the water disappears in holes called the Swallows.

**Molé, Louis MATHIEU, COMTE** (1781-1855). French statesman. Born in Paris, Jan. 24, 1781, his

youth was spent with his mother in exile, his father having lost his life in the Terror. He returned to France during the Empire and in 1806 became master of requests to Napoleon. In 1809 he was made a count, and four years later minister of justice. On the restoration, Louis XVIII accepted his allegiance and confirmed his title, appointing him minister of marine in 1815. With the accession of Louis Philippe he became minister of foreign affairs, but finding his hands tied by Talleyrand, he resigned. In 1836 he became premier, but, quarrelling with Guizot and in open hostility to Thiers, he was unable to make headway against the opposition, and resigned in 1839. He died Nov. 23, 1855.

**Molé, MATHIEU** (1584-1656). A French politician. A son of Edouard Molé, a lawyer who had helped Henry IV to secure the throne, he was educated at Orleans and became a lawyer. Prominent in public affairs during the time of Richelieu, in 1641 he was made president of the parlement in Paris. He was its spokesman when the members withstood Anne of Austria and Mazarin, and his conduct in Aug., 1648, in defying an angry mob, proved him a man of courage. He acted as a peacemaker during the Fronde, and died Jan. 3, 1656. Molé left some Memoirs which were published 1855-57.

**Mole Cricket** (*Gryllotalpa gryllotalpa*). Orthopterous (straight-winged) insect, common in Central and S. Europe, less frequently found in Great Britain. It is a member of the cricket tribe, lives underground, and preys upon worms, insects, and vegetation. It resembles the mole in habits, and its broad, modified fore limbs form excellent digging implements. The insect is nearly 2 ins. long, yellowish-brown in colour, and covered with fine, downy hair. It is known to take occasional flights by night. See Cricket.

**Molecular Weight.** Ratio of the weight of a molecule of any substance to the weight of the hydrogen atom. A gram-molecule is the mass of a substance in grams which is numerically equal to the molecular weight.



Comte Molé, French statesman

**Molecule** (Lat. *moles*, a mass). Smallest particle of any substance which can exist independently and still retain its distinctive chemical properties. In the kinetic theory of gases as evolved during the first half of the 19th century, the molecules are pictured as perfectly elastic, spherical bodies, small in size compared with the spaces between them, moving rapidly in all directions and frequently colliding. The average speed of their motion corresponds to temperature, their



Mole Rat. Specimen of the South European rodent resembling a mole

impact on the walls of a container to pressure. At  $0^{\circ}\text{C}$  and  $760^{\circ}\text{Hg}$  pressure, one c.c. of any gas contains some  $2.6868 \times 10^{18}$  molecules; their average speed varies from about  $\frac{1}{4}$  mile (xenon) to over  $1\frac{1}{2}$  mile (hydrogen) per second; the average distance travelled between collisions (mean free path) is a few millionths of a cm., from 100 to 900 times the effective diameter of an individual molecule.

Each molecule of any given substance is made up of individual atoms of chemical elements combined in a fixed proportion. The molecular weight is the sum of the separate weights of the constituent atoms. For gases, liquids, and solids in liquid solution, the molecular weight can be found experimentally and the exact number of atoms in each molecule deduced. Thus ammonia has one atom of nitrogen and three of hydrogen ( $\text{NH}_3$ ); hydrogen peroxide, two atoms of hydrogen and two of oxygen ( $\text{H}_2\text{O}_2$ ); cane sugar, 12 atoms of carbon, 22 of hydrogen and 11 of oxygen ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ). The ability of carbon atoms to join together in long chains and ring systems leads to the large and complicated molecules of organic chemistry (see *Plastics*).

The chemical behaviour and physical properties of a substance are closely related to its molecular structure, including not only the number and kind of different atoms present but also their exact arrangement in space. For crystalline solids the distinction between separate molecules largely disappears; the atomic nuclei are

arranged in a fixed geometrical pattern (the crystal lattice), and in a sense each crystal becomes one large molecule. See *Brownian Movements*; *Chemistry*; *Crystallography*; *Gas*; *Valency*.

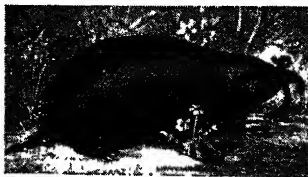
**Molenbeek S. Jean.** Town of Belgium, in the prov. of Brabant. A suburb and commune of Brussels, it lies to the W. of the capital, on a branch of the river Senne. The Canal de Charleroi has an important dock here, and there are industries in textiles, soap, rly. materials, metal works, etc.

**Mole Rat** (*Spalax*). Genus of rodents, related to the rats, but resembling moles in general appearance. They are well adapted to a subterranean life, with small eyes and ears. They are blind, their eyes being beneath the skin. They burrow underground, seeking the roots and bulbs on which they feed. The typical species (*S. typhlus*) is found throughout S.E. Europe, Asia Minor, Persia, and Lower Egypt.

**Mole St. Nicolas.** Harbour of Haiti, near the N.W. point of the island. It stands on a deep bay enclosed by a peninsula of the same name, overlooking the Windward Passage between San Domingo and Cuba. N. of the town is Cape St. Nicolas.

**Molesey** or **MOULSEY.** Name of two parishes, East and West, in Surrey, England, forming part of the Esher urban district. They stand on the right bank of the Thames, 2 m. W. of Kingston, with a rly. station known as Hampton Court. A regatta is held yearly. Near here the Mole enters the Thames, hence the name. Pop. 14,000.

**Mole Shrew** or **SHORT-TAILED SHREW.** Insectivorous mammal, related to the true moles, and



Mole Shrew. The small insectivorous mammal found in N. America and Japan

found in N.E. America. In appearance it closely resembles the common mole, but is much smaller. It burrows beneath the surface of the soil, and feeds upon small worms, mice, and insects. See *Shrew*.

**Moleskin.** Term applied to the velvety fur of the mole and to a cloth resembling it. The best real

moleskins are dark blue, and come from the Cambridgeshire Fens. The cloth is a strong, soft cotton fustian, used for labourers' clothes, gun-cases, etc. The surface is shaved before dyeing. See *Fur*.

**Molesworth, MARY LOUISA** (1839-1921). A British author. She was born in Holland in May, 1839, the daughter of Charles Augustus Stewart. Writing stories from childhood, she developed a genius for writing for the young. Many of her books were written under the pen-name of Ennis Graham. In 1861 she married Richard Molesworth (d. 1900), a nephew of the 7th Viscount Molesworth. Her story, *Lover and Husband*, appeared in 1869, and notable in a long list of its successors are *Carrots*, 1876; *The Cuckoo Clock*, 1877; *The Adventures of Herr Baby*, 1881; *The Laurel Walk*, 1898; *The Story of a Year*, 1910. She died July 21, 1921.

**Molesworth, SIR WILLIAM** (1810-55). A British politician. Born in London, May 23, 1810, he succeeded to his father's baronetcy in 1823, and in 1832 was elected M.P. for East Cornwall. In 1835 he founded The London Review and incorporated it with The Westminster Review, assisted by J. S. Mill as editor. A staunch Radical, he represented Leeds, 1837-41, and Southwark, 1845-55. In 1853 he entered Aberdeen's cabinet as first commissioner of works, in which capacity he forwarded the building of Westminster Bridge. He had always been keenly interested in colonial matters, and much was hoped from his appointment as colonial secretary in July, 1855, but he died Oct. 22 in that year.

**Molfetta.** Harbour of Italy, in the prov. of Bari. It is on the Adriatic 16 m. by rly. N.W. of Bari, has shipbuilding yards, and trades in wine, oil, almonds, and nitre. Its Romanesque cathedral, now the church of S. Corato, dates from the 13th century. Pop. 46,000.



Sir W. Molesworth, British politician After Sir J. W. Gordon



## MOLIÈRE: CREATOR OF MODERN COMEDY

A. A. Tilley, M.A., Author of *From Montaigne to Molière*

*This Encyclopedia contains articles on Molière's plays. See Comedy; France: Literature; and articles on Corneille, Racine, and other great names in French Literature*

Jean Baptiste Poquelin, called Molière, the creator and the greatest master of modern comedy, was born in Paris in Jan., 1622, a son of Jean Poquelin, an upholsterer, who was employed by the court and was apparently in affluent circumstances. His mother was Marie Cressé, and he was educated at the fashionable college of Clermont, where he studied the works of Aristotle. He was destined for his father's business, but at the age of twenty-one, having conceived a strong passion for the stage, he founded with some friends a theatrical company, *L'illustre Théâtre*, which played unsuccessfully at Paris for two years. They then tried their fortunes in the provinces, and after five years of struggle and hardship achieved a considerable dramatic reputation. In 1658 they returned to Paris, and two years later were definitely established in the theatre of the Palais Royal.

In 1659 Molière made his début in social comedy with *Les Précieuses Ridicules*, and in 1662 he produced his first great comedy, *L'École des Femmes*. In the same year he married Armande Béjart, a girl of twenty. She was a coquette and the marriage was unhappy. Molière's principal plays besides the two already mentioned are *Le Tartuffe*, 1664; *Don Juan*, 1665; *Le Misanthrope*, 1666; *Amphitryon*, 1668; *L'Avare*, 1668; *Le Bourgeois gentilhomme*, 1670; *Les Femmes savantes*, 1672; and *Le Malade imaginaire*, 1673. Slighter, but of excellent quality, are *L'École des Maris*, 1661; *Le Mariage forcé*, 1664; *L'Amour médecin*, 1665; *Le Médecin malgré lui*, 1666; *Le Sicilien*, 1667; and the remarkable *Critique de l'École des Femmes*, 1663, which is of capital importance for the understanding of Molière's conception of his art.

Molière was a first-rate actor of comedy, his acting, like Garrick's, being distinguished for vivacity of expression and gesture. He was also an admirable theatrical manager, devoted to the interests of the company, and sparing no pains in the rehearsal of his pieces. As a writer of comedy, he is unrivalled in his mastery of the whole gamut of laughter, from the most delicate humour to the broadest farce. Though in many of his plays, from *Le Tartuffe* onwards, there is a latent element of tragedy, it is the comic aspect of life that inspires

his imagination and gives the dominating colour to his work. We laugh at *Tartuffe* even while we fear him; we laugh at *Alceste* even while we pity him. In the one Molière shows us the ridiculous side of a criminal, in the other the ridiculous side of a lovable man of virtue.

But he aspires to correct men as well as amuse them, so he ridicules their vices and follies, especially those which threaten the social fabric or its true basis, the family. In the name of common-sense and truth, he wars against hypocrisy and superstition, against atheism and libertinism, against avarice, egoism, and vanity, against *précieuses*, prudens, poetasters, bores, pedants, professional humbugs, smug provincials, and smirking courtiers. Misled by the titles of some of his plays, e.g. *Le Misanthrope*, *L'Avare*, *Le Malade imaginaire*, some critics have accused him of creating abstract types rather than individuals. But his great characters, *Tartuffe*, *Don Juan*, *Alceste*, *Célimène*, *Harpagon*, have the breadth, the complexity, the individuality of real life. As for his minor characters, he creates them at a single stroke. They are alive the moment they appear on the stage.

A special word is due to his female servants. Honest, loyal, and outspoken, the very embodiments of common-sense, they stand for Molière's hatred of affectation and intellectual arrogance; they are the representatives, so to speak, of



Molière, from the bust by J. A. Houdon  
*Comédie Française, Paris*

his comic muse. Further, his characters are true to nature. There are no super-men and, except in his broader farces, no caricatures. Just as in real life, they are judged differently by different readers and different ages; there can be no better proof of their absolute fidelity. Some of his plays, e.g. *Don Juan*, *L'Avare*, *Le Bourgeois gentilhomme*, in their looseness of construction bear witness to the hurry in which they were written, but when Molière had time at his disposal he could build up his drama with a master's hand. If his dénouements are often weak and mechanical, it is because he cares even more for life than for art. His feeling for dramatic effect, for movement and action, is unrivalled. Even when there is little or no external action, as in *Le Misanthrope*, the dramatic interest never flags, and the action, though chiefly internal, is developed in a strictly logical sequence.

Molière's language, though mostly admirable, is occasionally, under the pressure of time, involved or careless. This has proved a stumbling block to some critics, but its dramatic qualities make it a joy to actors. His versification at its best is easy, spirited, and vigorous. *L'Étourdi*, 1653, his earliest comedy, is brilliantly written throughout, and in the vers libres of *Amphitryon* he shows the highest skill of the versifier's art. Molière died in Paris, Feb. 17, 1673, and was buried in the cemetery behind the church of St. Joseph.

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From a portrait of  
Lefrunc's school

J. B. P. Molière.

**Molina, LUIS** (1536-1600). A Spanish theologian. He was born at Cuenca, and became a Jesuit. He was for 20 years professor of theology at Evora. In his later years he was professor of moral theology at Madrid, where he died Oct. 12, 1600. His chief literary work, the Agreement of Freewill with the Gifts of Grace, 1588, in which he seeks to harmonise the freedom of the will with divine predestination, led to a long dispute between the Molinists and adherents of S. Thomas Aquinas.

**Molinos, MIGUEL DE** (1628-96). Spanish mystic. He was born at Muniesa, Aragon, in June, 1628, became a priest, and in 1665 went to Rome. Here he published a book called *The Spiritual Guide*, 1675, which taught an extreme form of quietism, for which he was condemned in 1687 by the Inquisition to imprisonment for life. He died Dec. 28, 1696.

**Mollison, JAMES ALLAN** (b. 1905). British airman. Born in Scotland, Apr. 19, 1905, Mollison was commissioned in the R.A.F.

at the age of 18. He transferred to the reserve after five years, and joined C. E. Kingsford-Smith (*q.v.*) as an air mail pilot in Australia. Mollison first became famous in 1931 with a record solo flight to England of 8 days 19½ hrs. The following year, he flew from England to Cape Town in 4 days 17 hrs. (this was also the first west-coast flight to the Cape), and made in a light aeroplane the first solo east to west crossings of the North (Aug., 1932) and South (Feb., 1933) Atlantic. With Amy Johnson (*q.v.*), to whom he was married 1932-38, he again flew the Atlantic in Aug., 1933 (the first direct flight from Great Britain to the U.S.A.), and also led the field in the first stages of the 1934 MacRobertson race to Australia (England to India in 22 hrs.). Mollison's next record flight, Oct., 1936, was New York-Newfoundland-London (coast to coast, 9 hrs. 20 mins.). In the Second Great War Mollison became a ferry pilot with Air Transport Auxiliary, and received the M.B.E. in 1946.

tends to face backwards; the shell is often internal or absent, *e.g.* the sea-hare and the sea-slug. (c) Pulmonata (Euthyneura). In this order the gills are absent and the mantle cavity acts as a lung. Most of the land and fresh-water snails are pulmonates.

**Class 4. SCAPHOPODA.** This is a small class whose members have a straight tubular shell. An example is Dentalium, the elephant tusk shell.

**Class 5. LAMELLIBRANCHIA** (Pelecypoda, or the Bivalves). Mollusca possessing a shell of two valves, one on each side of the body, which is normally compressed laterally. They are bilaterally symmetrical and have no definite head. The class includes mussels, cockles, oysters, and the clams.

**Class 6. CEPHALOPODA.** The main part of the foot is situated around the mouth and is divided into a number of sucker-bearing arms. The shell is in some absent or rudimentary, in others well developed. Examples include the cuttlefish, the octopus, and the nautilus. Important fossil groups, the Ammonites and the Belemnites, are found in the Palaeozoic and especially in the Mesozoic rocks.

Apart from the characteristic shell, most molluscs can be distinguished (*see illus.*) by their possession of a soft body which to varying extents is enveloped in a fold of tissue known as the mantle. Between this and the body there is the mantle cavity, in which are situated the respiratory organs named ctenidia (Greek, comb) or gills. In the bivalves the mantle consists of a thin layer of tissue with epithelial cells on either side and it may be prolonged at the posterior end to form a pair of tubular organs, the siphons through which water and food material are taken in and passed out. These siphons are especially noticeable in those molluscs which burrow deeply in sand or mud, *e.g.* cockles, Tellina, and Mya, whereas no tubular siphon is to be found in mussels, oysters, or scallops, all of which occur either attached to rocks, in shallow mud, or free-swimming.

The molluscan shell is secreted by the cells on the outside of the mantle and by the epithelium situated on the outside of the visceral mass. The shell consists of two main parts, the periostracum, or outermost layer of conchiolin, a horny substance allied to chitin, and a series of inner layers laid down later and composed mainly of crystalline calcium carbonate.

## MOLLUSCA: A GROUP OF INVERTEBRATES

E. R. Trueman B.Sc.

*A description of the characteristics and classification of the group of living creatures called molluscs. More detailed descriptions of particular species are given under Bivalves; Cephalopoda; Gastropoda; Oyster; Slug; Snail, etc.*

The phylum Mollusca (Lat. *molluscus*, softish) constitutes one of the major groups of the invertebrate animals, and contains the snails, slugs, whelks, mussels, squids, and cuttlefish, comprising approx. 60,000 living species.

The molluscs are essentially bilaterally symmetrical animals with unsegmented bodies. They possess a thickened muscular foot which is used for locomotion and is situated ventrally. Dorsally there is a visceral dome or hump normally covered by a shell which is one of the main characteristics of the phylum. Another structure occurring commonly in the molluscs is the radula, a rasp- or file-like organ situated in the mouth. It is moved to and fro producing a scraping action, so removing food material from, for example, the face of a rock.

The earliest molluscs undoubtedly occurred in the sea and some are found as fossils in the Cambrian rocks. During the Devonian period they began to inhabit fresh water, and in the Carboniferous the land. At the present time both gastropods and bivalves occur in fresh water, whereas only gastropods have become adapted for life on land.

The following is an outline classification of the Mollusca:

**Class 1. SOLENOGASTRES.** These are highly primitive molluscs (*e.g.* Neomenia) having a worm-like body and no shell. They possess a heart enclosed within a pericardium and a nervous system which is bilaterally symmetrical.

**Class 2. PLACOPHORA.** This class comprises the Chitons; its members have a broad flat foot and a calcareous shell of eight plates.

**Class 3. GASTROPODA.** This is the largest class, and shows typically an asymmetrical condition owing to the atrophy or disappearance of the organs of the original left side. Gastropoda usually possess a shell coiled in a helicoid or corkscrew spiral, a thickened muscular foot, a head bearing paired tentacles and eyes, and a mouth with a well-developed radula. The class may be divided into three orders:

(a) Prosobranchia (Streptoneura). The nervous system shows a typical figure of eight owing to the twisting or torsion of the visceral hump, *e.g.* the limpet and the whelk. (b) Opisthobranchia (Euthyneura). Owing to detorsion the opening of the mantle cavity

These inner layers are generally formed of at least two layers in which there may be considerable differences in the exact arrangement of the crystals. The periostracum, which is thin, is secreted by the epithelial cells situated along the edge of the mantle and covers the shell and gives protection to it from erosion.

The crystalline calcium carbonate of the inner layers is in the form of either calcite or aragonite. Most shells possess only one of these crystalline forms although a few have both types present in separate layers, e.g. the scallop. Whereas it is known that the shell is formed from the secretion of calcium carbonate by the epithelial cells of the mantle, the precise manner of deposition of these varying crystalline structures and the conditions which determine the presence of calcite or aragonite have not been ascertained.

In the gastropods respiration is typically carried out by a pair of gill-like structures, the ctenidia. In the primitive condition these were paired structures, one on the right and one on the left side, within the mantle cavity, but in the majority that of the right side is alone retained. By the anti-clockwise twisting or torsion of the visceral hump this ctenidium becomes situated on the left front side of the animal. Some of the gastropods have developed secondary external "gills" often arranged in a circle around the anus, e.g. *Doris*, the sea slug. The land snails and many of those pulmonates which occur in fresh water have no ctenidium and respire through the wall of the mantle cavity which, apart from a small opening to the exterior, is completely enclosed and functions as a pulmonary air-filled sac or lung. The cephalopods also respire by means of ctenidia within the mantle cavity.

The bivalves possess a pair of ctenidia inside the mantle and on either side of the foot; each one is composed of two plates or laminae, and upon the exact form of these the classification of the group is generally based. Respiration is by a flow of water over these gills and also over the inner surface of the mantle. The main function of the ctenidia in the bivalves is, however, concerned with feeding, for they are ciliated and cause a flow of water in a definite direction from the inhalant siphon. These gills divide the mantle cavity into inhalant and exhalant chambers, the former being ventral and some-

times anterior. The water is thus strained through a sieve of tissue between these chambers, leaving particles of food suspended on the gill. This food, together with some mucus that is secreted, is passed to the mouth by ciliary action where it is sorted out by the thickened lips or labial palps. Research has confirmed that feeding in the bivalves is purely quantitative, the selective mechanism being one in which the smaller masses only are passed to the mouth irrespective of their food value. This method of feeding is called filter feeding.

Gastropods generally obtain their food by scraping with the radula but some are filter feeders. The cephalopods have a pair of horny jaws, rather like the beak of a parrot, which are situated at the mouth.

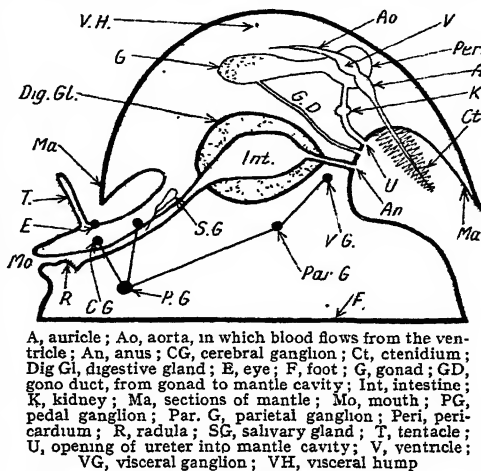
Some molluscs are carnivorous, e.g. the whelk, some herbivorous, e.g. the limpet, some omnivorous. *Teredo*, or ship worm, is one of the few animals able to digest wood directly. It bores into the woodwork of ships and piers by a rotating movement of its shell, forming a tube through the wood.

#### The Digestive System

Digestion in the mollusca is both extracellular and intracellular. In the gastropods salivary glands and a large liver (hepato-pancreas) are always present. The bivalves show an interesting modification associated with filter feeding. They possess a crystalline style in the stomach or anterior part of the intestine which rotates by the action of cilia. The free end of the style projects into the stomach and is constantly worn away by friction, releasing into the stomach amylase for the digestion of the carbohydrates; the fats and proteins are digested intracellularly. This is a very effective mechanism whereby a continuous flow of enzyme is produced to digest food which is being provided in a steady stream owing to the method of feeding.

The blood of molluscs is generally colourless but the pigments haemocyanin and haemoglobin are

found in certain forms, the latter in the common fresh water snail *Planorbis*. The molluscan heart consists of one or two auricles and a ventricle and is enclosed within the pericardium, a specialised part



Mollusca. Hypothetical section of a primitive mollusc

of the coelom, which communicates with the cavity of the kidneys.

The nervous system consists primitively of a number of paired ganglia and their connexions. This condition may be seen in the more primitive members of the phylum, e.g. the Chiton. The gastropods usually have a pair of cerebral ganglia, closely united and situated over the gullet, giving off connectives both to each pedal ganglion and to each pleural ganglion. The connectives between this last pair of ganglia and the parietal ganglia are usually in a twisted figure of eight condition resulting from the anti-clockwise torsion of the visceral hump. In the more highly developed families a secondary symmetry occurs, owing to a detorsion or to the shortening of connectives. The twisted or streptoneurous condition is found in the limpet and the whelk, the euthyneurous in terrestrial snails and slugs.

In the cephalopods the nervous system is much more highly organized than in the gastropods or the bivalves. The ganglia of the central nervous system are closely aggregated around the oesophagus into a structure which may be called the brain. There also occur in this class very thick nerve fibres developed to produce a high speed of conduction of nervous impulses. In the vertebrate animals this is carried out by the development of a large number of thin nerve fibres.

Among the sense organs of the molluscs are: (a) statocysts, organs of balance; (b) osphradia, chemoreceptors whose function would appear to be to test the condition of the water which enters the mantle cavity; (c) eyes, very well developed in the cuttlefish and in certain bivalves, e.g. in *Pecten*, the scallop.

Reproduction in molluscs is sexual, and the sexes are usually separate. Copulation takes place in the cephalopods and in certain gastropods which have a penis. Development from the egg is typically through a veliger larva, which is free-swimming. The molluscs are used by man as food. Many species are edible, though only few, e.g. oysters, mussels, cockles, whelks, winkles, and certain land snails, are eaten in quantity. The shell of molluscs is of considerable economic value: e.g. from the shells of certain bivalves mother-of-pearl is produced. Some oysters also produce pearls (q.v.).

**Bibliography.** Molluscs, A. H. Cooke, 1895; Mollusca, P. Pelseneer, 1906; Guide to the Mollusca exhibited in the Zoological Department of the British Museum, 1923; British Snails, A. R. Ellis, 1926

**Molluscum Contagiosum.** A disease of the skin, in which small, white tumours caused by a filter-passing virus appear on the surface of various parts of the body, the face and eyelids being often involved. The disease is contagious, and the growths, if left alone, persist for a long time, but ultimately tend to disappear spontaneously. Treatment consists in incising the tumour, squeezing out the contents, and disinfecting the walls of the containing sac.

**Mollwitz.** Village of Silesia. It is 7 m. from Brieg, and is famous for the battle fought here, April 10, 1741, between the Austrians and the Prussians. Frederick the Great had seized Silesia, and early in 1741 the Austrians equipped an army to recover it. Under Neipperg this marched from Neisse towards Brieg, thus cutting off the Prussians from their base. The scattered forces of the latter were concentrated with some difficulty, and the two armies came into touch near Mollwitz. After a few days spent in getting into position the battle began on April 10. The Austrian horsemen attacked, and the Prussian cavalry was routed, and Frederick himself took flight. However, the trained Prussian infantry presented a far tougher front, and the Austrian infantry suffered greatly.

**Molly Maguires.** Name of an Irish secret society formed in 1843 in co. Monaghan for the purpose of intimidating landlords. The name was afterwards applied to an American-Irish secret society which flourished in the mining districts of Pennsylvania, U.S.A., 1854-77. In 1875 the Molly Maguires engineered a general strike in that region, and many crimes were traced to them. So serious did the situation become that a strong effort was put forth to crush the society. A Pinkerton (q.v.) detective succeeded in becoming a member of the organization, and on his information the leaders were arrested, convicted, and sentenced to death. The society then soon disappeared. Sir A. Conan Doyle based his story *The Valley of Fear* on the murders.

**Moloch.** Canaanite fire-god, the Semitic word meaning king. This Septuagint spelling represents the Hebrew Molech, whose worship, notably under Ahaz and Manasseh, involved child-sacrifice and pyre-burning (2 Kings 23). These were sacrifices to Jahveh, and the rites survived among the Jews until a late period, as is proved by references to them by Ezekiel and Jeremiah. The burning of living children in a brazen, calf-headed Moloch-image is a medieval fable.

**Moloch Horridus.** Australian lizard of the family Agamidae, also called spiny lizard, and spiny or thorny devil. The upper parts are liberally armed with horny spines, the head and depressed body are about 4½ ins. in length, and the tail about 3½ ins. Its form is much like that of a toad with a tail added; and when alarmed it increases the resemblance by puffing out its body, and making its spines more effective for protective purposes. Its broad blotches of light and dark colour harmonise with the soil and can be varied like those of the chameleon, but to a much less extent. It is perfectly harmless, its spines being purely defensive. Its food consists of insects, chiefly ants. See Lizard colour plate.

**Molokai.** One of the Hawaiian Islands, Pacific Ocean. Its mountains, scored by ravines and forest clad, rise to 3,000 ft. The leper settlement, the scene of the labours of Father Damien (q.v.), is in the middle of the N. coast. The people live mainly on a narrow fertile strip along the S. coast. Area, 261 sq. m. Pop. 5,340.

**Molopo.** Former tributary of the Orange river, S. Africa. It emerges from a swallow hole in the

limestone of Marico dist., near Mafeking, and flows W., forming the N. boundary of Bechuanaland. As it crosses the Kalahari desert it becomes a dry watercourse, bordered by trees, which ultimately joins the Orange river.

**Molotov,** VYACHESLAV MIKHAILOVICH (b. 1890). Russian politician. Molotov (originally



V. M. Molotov,  
Russian politician

named Scriabin) was educated at the St. Petersburg Polytechnic and organized revolutionary student groups. In 1917 he became a member of the Petrograd Soviet executive committee, and was appointed secretary of the central committee of the Communists of the U.S.S.R. in 1921. Molotov became chairman of the council of people's commissars in 1930 and was nominated foreign commissar in 1939, succeeding Litvinov. In that year he signed the Russo-German non-aggression pact which precipitated the Second Great War. In 1940 he visited Berlin to confer with the Nazi leaders. In 1941 he resigned his chairmanship of the council, but retained the post of foreign commissar and assumed the vice-premiership.

In July, 1941, he was appointed vice-chairman of the defence committee, and in May, 1942, signed the twenty-year Russo-British mutual assistance pact. He took part in all the important war conferences and was the leader of the Russian delegation at San Francisco in April, 1945, being present also at Potsdam in July. Molotov was one of the council of foreign ministers which met in London in Sept., 1945; in Moscow in the following December; in Paris, April-May, 1946; and in London, Nov.-Dec., 1947. His uncompromising attitude led to frequent clashes with the delegates of the western powers. He ceased to be foreign minister 1949, but remained vice-premier.

During the Russo-Finnish War of 1939-40 his name was used for two weapons—the Molotov cocktail and the Molotov bread basket. The former was a bottle containing a liquid which burst into flames on coming into contact with the air. It was used principally against tanks. The bread basket was a container fitted with a parachute that was released from an aero-

plane and opened on reaching a prearranged height above the ground, releasing a shower of incendiary bombs. This device was first used by the Russians.

**Molsheim.** Town of Alsace, France. It stands at the foot of the Vosges, on the river Breusch, and is a rly. junction. The buildings include a modern town hall and several churches, including a fine Roman Catholic one. Until 1702 there was a noted Jesuit college here. There are some manufactures, while the vine is grown in the neighbourhood.

**Molteno, SIR JOHN CHARLES** (1814-86). South African statesman. Born in London, June 5, 1814, he went to S. Africa in 1831, and engaged in business and farming at the Cape and at Nelspoort. He took part in the Kaffir War of 1846, and sat for Beaufort in the first Cape parliament, 1854. An active advocate of responsible government for the Cape Colony, he was appointed the first premier when it was conceded in 1872. He visited England in connexion with Lord Carnarvon's conference on S. African affairs, 1876, and stood for the unification of S. Africa, but strong differences of opinion led to Molteno's dismissal in Feb., 1878, and for a time he retired from public life. In 1880 he was returned for Victoria West, and resumed the office of colonial secretary, but in 1882 he finally retired, being rewarded with the K.C.M.G. He died Sept. 1, 1886.

**Moltke, HELMUTH KARL BERNHARD VON** (1800-91). German soldier. The founder of the modern system of military command by devolution was born of noble family at Parchim, Mecklenburg, Oct. 26, 1800. His youth was spent in Denmark, but in 1822 he entered the Prussian service. With his duties he combined the study of history, and wrote on the European events of the time. In 1835 he accepted an offer of employment by the sultan of Turkey, and served in the Balkans and Syria.

He rejoined the German army in 1840, and in 1845 published his history of the Russo-Turkish war of 1828-29, a military classic. In 1845 he married an Englishwoman, Mary Burt. After holding senior staff appointments at Coblenz,

1846, and Magdeburg, 1848, he was chosen in 1855 as adjutant to Prince Frederick William (afterwards the emperor Frederick), and with him visited France, Russia, and England.

In 1858 Moltke became chief of the general staff of the Prussian army. He based his plans for possible wars on military history. When war came against Denmark in 1864, his plan to capture the Danish army in the first battle was imperfectly carried out by Wrangel, the commander in the field; but within a short time the Danes had been driven on to the island of Alsens and to surrender.

The following year Moltke outlined the tactics suited to the new breech-loading rifle, which proved so successful in the Seven Weeks' War against Austria, 1866, and the Franco-Prussian War of 1870-71. In both wars Moltke remained at the headquarters of the king, who was c.-in.-c. of the army, the command in the field being delegated to three army commanders.

In 1870 Moltke was created a count, and in 1871 he was elected to the Reichstag. He remained in office until 1883, supervising the histories of his campaigns, and died in Berlin, Aug. 24, 1891. See Franco-Prussian War; Seven Weeks' War.

**Moltke, HELMUTH JOHANNES LUDWIG VON** (1848-1916). German soldier. Nephew of the great von Moltke, he was born at Gersdorff, Mecklenburg-Schwerin, May 23, 1848. He served through the Franco-Prussian War, and was for a time a lecturer in the Military Academy, Berlin. In 1891 he was appointed A.D.C. to William II, and in 1906 became general of infantry and chief of the general staff, thus being the real generalissimo of the German army when the First Great War broke out. Owing to the failure to capture Paris, he was superseded by Falkenhayn in Oct., 1914. He died on June 18, 1916.

**Molton, SOUTH.** Mun. borough and market town of Devonshire. It stands on the Mole, 12 m. S.E. of Barnstaple and 197 m. by rly. from London. The chief buildings are the fine Perpendicular church of S. Mary Magdalene, the guildhall, and the market house. The town is an agricultural centre, and its industries include the manufacture of sheets and cosmetics. It had fairs in the Middle Ages, and was given a corporation in 1590. It was then and later a centre of the woollen manufacture, while at one time lace was made

here. At one period it sent two members to parliament. Market days, Thurs. and Sat. Pop. 2,831. North Molton is a parish and village, 3 m. to the N.E.

**Moluccas OR SPICE ISLANDS.** Islands of Indonesia. They are Gilolo or Halmahera, Ternate, Tidore, Bachian, Buru, Ceram, Amboyna, and the Banda Islands. The islands coversome 20,000 sq. m. in area, 40,000 sq. m. if adjacent islands are included; est. pop. 893,400. In general they are volcanic; and there are active cones on Ternate, Gilolo, and Banda.

Ternate consists of a peak, 6,000 ft. above sea level, and has the residence of the sultan. Ceram exports sago, Amboyna cloves, and the Banda Islands nutmegs.

The Spice Islands were known by repute long before European ships reached the East Indies, and their native and unique products were articles of trade greatly desired during the Middle Ages, when seasoning was required to make winter meat palatable. Two Portuguese, Serrano and D'Abren, located them in 1512, and they were Portuguese from 1521 until the natives expelled the traders in 1583; in 1613 the Dutch acquired them, and have held them since that date. The early Dutch policy was marked by great secrecy; to maintain the monopoly in the supply of cloves, the tree was exterminated in all the islands except Amboyna. The monopoly has been abandoned, and both cloves and nutmegs are grown elsewhere in Indonesia and Malaya.

On Jan. 30, 1942, Japanese aircraft bombed Amboyna, the second largest naval and air base in the Netherlands E. Indies, and Japanese troops made a landing, which was strongly opposed by the garrison; but all organised resistance had been overcome by Feb. 7. Halmahera was also seized by the Japanese.

Both Halmahera and Amboyna were attacked repeatedly by Allied aircraft during 1943 and 1944. On Sept. 14, 1944, U.S. troops landed on Morotai, and they were in control of the island by the 17th, the Japanese garrison having fled to the hills. It became an important base for Allied bombers in operations against the Japanese-occupied Philippines and E. Indies. No further major operations were undertaken in the Moluccas, Japanese forces there surrendering at Morotai, Sept. 9, 1945. The Moluccas were recognized by the Netherlands govt as part of the new state of E. Indonesia Dec. 1946. See Indonesia.



Count von Moltke,  
German soldier



**Molybdenite.** Chief ore mineral of molybdenum (*v.i.*), molybdenum sulphide, containing up to 60 p.c. of the metal. It generally occurs as soft lead-grey scaly masses. Molybdenite is found in deposits associated with granitic rocks, *e.g.* in granites, granite pegmatites, in siliceous veins formed at a late stage in granite consolidation, and in associated contact-metamorphic deposits.

**Molybdenum** (Gr. *molybdoe*, lead). One of the metallic elements, chemical symbol, Mo; atomic number, 42; atomic weight, 95.95; density, 10.0 gm per c.c.; melting-point about 2,622° C. Silver white in colour, with a strong metallic lustre, it is prepared by heating the chloride or the trioxide to redness in a current of hydrogen.

Molybdenum occurs in nature in various forms, of which two are of commercial importance: the sulphide, MoS<sub>2</sub>, known as molybdenite, which somewhat resembles graphite, being a soft, lead-grey mineral with a metallic lustre; and the yellow lead molybdate, PbMoO<sub>4</sub>, wulfenite. Among the rarer minerals is molybdenum ochre, MoO<sub>3</sub>. Of the world's production, approx. 20,000 tons annually, 90 per cent. comes from the U.S.A. The chief centre is Climax, in Colorado. Smaller producers are in New Mexico, Norway, and French Morocco, while quite a large amount of molybdenite is produced as a by-product from various copper mines. The ore is treated by roasting, which causes the volatilisation of the trioxide, MoO<sub>3</sub>, which is condensed in crystal form. The oxide is subsequently reduced with hydrogen to a grey metal powder, which may be pressed into bars, sintered, swaged, and drawn into wire or rolled into sheet. This process does not involve melting the metal, which is difficult due to its high melting point; but a process is in the experimental stage for producing ductile molybdenum by melting in an arc furnace under an atmosphere of hydrogen.

Molybdenum sulphide appears to have been first recognized in 1778 by C. Scheele; and was first isolated by the Danish chemist P. J. Hjelm in 1782. It is quite malleable and softer than steel. Normally unaffected by air, it oxidises rapidly at temperatures above 600° C., but it may be forged and welded at red heat in a protective atmosphere. In the electrical industry, where it



Mombasa, Kenya Colony. Landing place for small steamers and native craft

is nicknamed "Molly," it has a variety of uses, its good conductivity being an asset. In radio valves molybdenum wire is used for winding the controlling grids, and it acts as the support for filaments in incandescent lamps. Molybdenum is used for crucibles and for furnace windings, but for such uses it must be protected from the air either by hydrogen or by a suitable refractory. Its chief use is in the alloy steel industry, where it is sometimes used alone but more commonly in association with nickel and chromium. Here it increases strength at high temperatures and reduces the tendency for temper brittleness. Additions are usually of the order of 0.3 to 1 per cent. and they are made in the form of ferro-molybdenum. The addition of about 0.5 per cent. to cast irons increases their strength. Various non-ferrous alloys are made, such as one containing 60 per cent. of molybdenum, with tungsten, platinum and cupro-nickel, used for tipping fountain pen nibs. Certain molybdates are used in dyeing, to give a blue colour to glazes and pottery and for colouring rubber and leather. See Metallurgy; Steel; Thermionic Valve.

**Mombasa.** Seaport of Kenya. Built mainly on a coral island (3 m. long by 2 wide, 5½ sq. m. in area) and

connected with the mainland by rly., Mombasa is the principal port on the E. Africa coast. The Old Harbour, on the N.E. of the island, is mainly used by small steamers and native craft (dhows); Kilindini harbour, used by larger ships, is at the S.W. end. A new slipway was opened in 1931, taking ships up to 2,300 tons. Road connexion with the mainland on the N. side of the island was effected in 1931 by the opening of the Nyali Bridge, which is built on pontoons. Fort Jesus, erected by the Portuguese during 1593-95, was the scene of the Arab siege, 1696-97, and is now a prison. Much of the earlier history of the E. coast centres upon Mombasa. Pop. 102,500.

**Moment.** Term used in mechanics. The moment of a force about a point, or axis, measures the tendency of the force to produce rotation about that point, or axis. The exact measure of this moment is given by the product of the force into the perpendicular distance of the point, or axis, from the line of action of the force. If there are two or more forces, the algebraic sum of their separate moments is the same as the moment of their resultant about the point.

**MOMENT OF INERTIA.** If the rotation of a body about an axis is to be altered, a moment (or torque, as it is often termed) must be applied about the axis. The acceleration produced by a given torque depends not only on the actual mass of the body but on its distribution with respect to the axis of rotation. If  $m$  is the mass of a small body located at a distance  $r$  from the axis of rotation, its moment of inertia is given by  $I = mr^2$ . For an extended body the total moment of inertia will be given by summing up for all the individual particles, thus:  $I_{\text{total}} = \Sigma mr^2$ . A table of typical moments of inertia for differently shaped bodies about particular axes is given here:

Body (of mass $m$ )	Axis	Moment of Inertia
Thin ring of radius $r$	Through centre perpendicular to plane of ring	$mr^2$
" " " " "	Along any diameter	$\frac{1}{2}mr^2$
Thin disc of radius $r$	Through centre perpendicular to plane of disc	$\frac{1}{2}mr^2$
" " " " "	Along any diameter	$\frac{1}{4}mr^2$
Uniform thin rod of length $2l$	Perpendicular to rod at centre	$\frac{1}{12}ml^2$
Sphere of radius $r$	Along any diameter	$\frac{2}{5}mr^2$

**MOMENTS AND CENTROID.** In plane geometry the moment of a figure about any given line is found by dividing the figure into  $n$  small elements, multiplying the area of each element  $a$  by its perpendicular distance  $d$  from the line, and calculating the limiting value of  $\Sigma ad$  as  $n$  approaches infinity. The second moment is  $\Sigma ad^2$ , the third  $\Sigma ad^3$ , etc. The centroid is the point whose distance from the line multiplied by the total area of the figure is always equal to the moment of the figure. Similar definitions hold for three-dimensional figures.

**MOMENT OF A MAGNET.** This is measured by the product of a magnet's pole strength and the distance between the poles.

**Momentum.** In dynamics, the product of the mass of a moving body and its linear velocity. The term was used by Galileo and Newton, and by the latter's third law of motion the momentum of a body or a system of bodies cannot be changed by the actions of forces between their various parts. This is the principle of the conservation of momentum. The angular momentum of a body is a term used in connexion with rotating bodies, and is the product of the moment of inertia of the body about the axis of rotation and its angular velocity. See Dynamics.

**Mommsen, THEODOR** (1817-1903). A German historian and scholar. He was born at Garding in Slesvig, Nov. 30, 1817, the son of a pastor, and educated at Kiel university. Specialising in the study of antiquities, he spent three years in Italy studying inscriptions. The results of his work brought him wide recognition, and in 1848 he was appointed professor of civil law at Leipzig. This post he lost in 1850 in consequence of expressions of sympathy with the revolutionary party.

Taking refuge in Switzerland, Mommsen was appointed pro-

fessor of Roman law at Zürich. Returning to Germany in 1854, he became prof. of ancient history at Berlin in 1858. In the meantime he had been at work on his Roman History, which appeared during 1854-56. With his professorship was bound up the task of editing the Corpus Inscriptionum, which he had been asked to undertake by the Berlin Academy. He also engaged in an immense amount of other labours, notably a work on Roman coinage, and two others dealing with Roman law. In 1884 appeared his Roman Provinces, the most valuable of all his contributions towards the elucidation of ancient history. During 1873-82 he was a member of the Prussian parliament. He died Nov. 1, 1903. There is a good English translation by W. P. Dickson of the Roman History and the Roman Provinces.

**Momus.** In Greek mythology the god of jest and mockery. His sarcasm and criticisms became so hurtful to the other gods that he was expelled from heaven. He was the son of Night.

**Mona.** Name by which the island of Anglesey (*q.v.*) was known to the Romans. The name was also applied, perhaps in error, to the Isle of Man.

**Monaco.** Principality of S. Europe. Except for the short coast-line on the Mediterranean Sea, this small state of 8 sq. m. is entirely bounded by the French dept. of Alpes-Maritimes. Coal and wine are imported in exchange for olive oil, oranges, citrons, and perfumes. The revenue is mainly derived from the gaming tables of Monte Carlo. There are three towns, Monaco, Monte Carlo, and La Condamine. The first contains



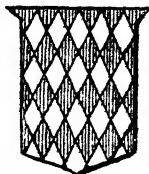
Theodor Mommsen.  
German historian

the new Roman-Byzantine cathedral, seat of an R.C. bishop, and the palace of the prince. It is also the seat of the international hydrographic bureau. Pop. 19,242.

The family of Grimaldi secured Monaco in 968, and when in 1715 the male line failed it passed to a daughter and her husband. It was French, 1793-1815, and for a few months in 1859-60 was in the hands of the Sardinians. Since 1861 it has been under the protection of France. A constitution of 1911 provides for government by a prince and council. Louis II (1870-1949), prince from 1922, was succeeded by his grandson, Rainier III (b. 1923). See Monte Carlo.

**Mona Complex.** Two groups of Pre-Cambrian (*q.v.*) rocks found in Anglesey and on the N.W. side of the Lleyn Peninsula, Wales. Various members of the complex are intensely folded and highly metamorphosed, but they have been subdivided by Edward Greenly into a lower group of gneisses and an overlying group of sediments and volcanic rocks.

**Monad** (Gr. *monas*, a unit). Term in various systems of philosophy; also in biology and physics. According to Leibniz (*q.v.*), the founder of the system known as monadology or monadism, every compound can be resolved into elements which he calls monads. These are simple, incorporeal, unextended, intelligent, substantial unities. They are not physical points, like the atoms of Epicurus, but metaphysical points, real forces, not purely passive, like the corporeal elements of Descartes. All that exists results from the association of these monads with a principal monad, whereby is produced a gradation of species, ascending from raw matter to the



Monaco arms



Monaco, South Europe. General view from the town of Monaco, looking east; showing the town of La Condamine, part of Monte Carlo Harbour, and, left, the palace of the Prince of Monaco

vegetable, the animal, the intelligent conscious being, and finally to God, the ultimate reason of things. In ancient philosophy monad signified unity as opposed to duality, and also the number one, to which the Pythagoreans appear to have attributed creative force.

**Monagas.** State of N. E. Venezuela. It is S. of Sucre, N. of the Orinoco, and W. of the Gulf of Paria and Delta Amacuro; the E. boundary is the Manamo, the most westerly distributary of the Orinoco delta. The W. section of the state is hilly, the E. low-lying. It is well watered, fertile, and contains several lakes. The capital is Maturin. Area, 11,155 sq. m. Pop. 122,901.

**Monaghan.** County of Eire, in the prov. of Ulster. The surface is undulating, with hills S. and E., and in parts boggy. The chief rivers are the Blackwater, flowing along the N.E. boundary, and the Finn, and there are many small lakes. Oats, flax, and potatoes are grown; cattle, sheep, pigs, and poultry are reared. Coal, limestone, and gypsum are mined on a small scale. The Eire state rlys. and the Ulster Canal serve the county. Monaghan is the county town; other places are Clones, Carrickmacross, Castleblayney, and Ballybay. Until the reign of Elizabeth the co. was owned by the MacMahon family; later it was made a shire. Chief antiquities are a Gaelic round tower and the fort at Clones. Three members are elected to the Dáil. Area, 498½ sq. m. Pop. 57,959.

**Monaghan.** Urban dist. and market town of co. Monaghan, Eire; also the county town. It is on the Eire state rlys. and Ulster Canal, 52 m. N.W. of Dublin. The chief buildings are the modern R.C. cathedral, the court house, and others used for public purposes. There are a convent, a college for priests, and three state hospitals. Embroidery and bacon curing are the occupations. Monaghan grew up round a monastery, and was made a corporate town in the 18th century. In the vicinity is Rossmore Park. Market day, Mon. Pop. 4,873.

**Mona Lisa.** Name given to a half-length portrait by Leonardo da Vinci now in the Louvre, Paris. The subject was a Florentine lady, Lisa di Anton Maria di Noldo Gherardini, who married Francesco di Bartolommeo del Giocondo in 1495. From her married name the picture is often known as La Gioconda. It is painted in tempera on a panel measuring 2 ft. 6½ ins. by 1 ft. 9

ins., and was probably executed 1503-06. The artist himself held the portrait to be unfinished. It is believed to have been purchased by Francis I of France for 4,000 gold florins. In 1911 it was stolen from the Louvre, but was discovered in Florence and restored to its place in 1913. See Leonardo da Vinci illus.

**Mona Monkey.** Species of guenon monkey (*Cercopithecus*) found in W. Africa. It is recog-



Mona Monkey. Specimen of the West African species of guenon

nized by its iron-grey body with a vivid chestnut stripe from the middle of the back to the root of the tail, and white chest and throat. The face is purple, the side whiskers yellow. See Guenon.

**Monarch** (Gr. *monos*, alone; *archein*, to rule). Name for a ruler whose authority is undivided. It originated with the Greeks, who classified states according to their method of government. The word monarchy was used throughout the Middle Ages, and later for the great states in which a single ruler had supreme power, e.g. the Hapsburg monarchy and the French monarchy, and continually appears in treatises on government, e.g. Dante's *De Monarchia*. Today monarch is merely a synonym for an emperor or king who rules by hereditary right as opposed to a president or elected head. Monarchy is absolute when there is no legal check on the power of the ruler, limited when his power is shared by other persons, such as nobles or an elected body, whether they derive their power from custom or from a constitution. See Divine Right; Government; King; Sovereignty; State.

**Monarchianism.** Name given to a heresy propounded in the 2nd and 3rd centuries by certain Christians, who, under cover of upholding the monarchy, or original oneness and sole government of God, opposed the orthodox doctrine of the Trinity, on the ground that it involved tritheism. This heresy, which was denounced by Justin Martyr (c. 100-165), appears to have been introduced to Christianity by Alexandrian Jews and Gnostics. The heresy was usually presented in one of three forms. The Adoptionist view was that Christ was not essentially and originally divine, but became the Son of God by adoption of the Father; the Dynamistic view was that Christ was a mere man, on whom God the Father conferred divine powers; and the Modalistic view held Christ to be the Father Himself incarnate. See Adoptionism; Sabellianism; Trinity.

**Monash, Sir John** (1865-1931). Australian soldier and engineer. Born at Melbourne of Jewish parents, June 27, 1865, he graduated at the university and became a civil engineer; a pioneer of reinforced concrete in Australia, he was appointed president of the Victorian engineering institute. He entered the army in 1887. When the First Great War began he was made chief censor, but soon went to Gallipoli in command of the 4th Australian brigade, with which he saw heavy fighting. Proceeding to France, he led the 3rd Australian division with distinction at Messines in 1917. On June 1, 1918, he succeeded Sir William Birdwood as commander of the Australian corps, and was created K.C.B. after the operations of Aug. 8. At the armistice he became director-general of demobilisation in his country, but left the army in 1920 to manage the Morwell Brown coalfield scheme. During 1924-26 he was president of the Australian Association for the Advancement of Science. He died Oct. 8, 1931.



Sir John Monash, Australian soldier Bassano, Ltd.

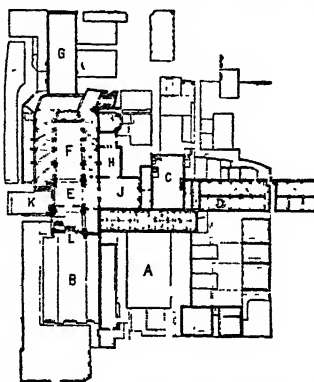
**Monasterboice.** A village of co. Louth, Eire. It is 5 m. N.W. of Drogheda, and is famous for remains of archaeological interest. These include two churches, a round tower 110 ft. high, and three fine crosses.

**Monastery** (Gr. *monastērion*). House for monks. The term seems at first to have been applied to all religious houses of retirement, whether for men or women; but in course of time, while monks and nuns were housed in abbeys and priories, the former under abbots and priors, and the latter under abbesses and prioresses, it became the custom to call the houses for nuns nunneries or convents, and those for monks monasteries. See Abbey; Convent; Karakoram; Priory.

**Monastery, THE.** Eleventh of the Waverley novels, published in March, 1820, and the only one to which Scott added a sequel (*The Abbot*). A romance of the monastery of St. Mary's of Kennaquhair (Melrose Abbey), it deals with the family history of the Avenels (the lawless Border baron, Julian; his gentle niece, Lady Alice, and her daughter, Mary) and the Glendinnings (the widowed Elspeth, who shelters Lady Alice and her daughter, and her sons, Edward and Halbert, rivals for the hand of Mary). Euphuism is burlesqued in the character of the fugitive Elizabethan courtier, Sir Piercie Shafton, and the introduction of the supernatural White Lady, guardian spirit of the Avenels, is regarded as a weakness.

**Monasticism** (Gr. *monastikos*, living alone). System under which persons live who have abandoned the world for a life of religious seclusion. It is more ancient than Christianity, and perhaps is prehistoric. The problem of conformity to the world had become acute, even before the formation of a state Church under Constantine, in 325. Thenceforward a steadily increasing stream of Christians went out to hermit life in the Egyptian deserts. They fled not only from the world, but from a Church which had admitted the world to its bosom. Many of these hermits gradually formed communities under systematic rules, of which S. Basil's is the best known.

Meanwhile the monastic ideal spread to Western Europe, where it found a legislative genius in S. Benedict (d. 542), whose rule either superseded or modified all others. Both Church and State, from different points of view, agreed in ratifying the indelibility of monastic vows. From the "Three Substantials" of poverty, chastity, and obedience not even emperor or pope could grant dispensations. These, under the Benedictine rule, were reinforced by other prescriptions—frequent prayer, manual labour, abstinence from flesh-food, and strict claustration within monastic precincts. The rules of the



Monastery. Plan of the ancient priory of St. Bartholomew, London. A. Cloisters. B. Nave. C. Chapel. D. Rectory. E. Great Tower. F. Choir. G. Prior's house, above which was infirmarium and dormitory. H. Chapter House. I. South transept. K. North transept. L. Present entrance to church.

regular canons were rather less strict than those of the Benedictines in the matter of food and claustration.

Throughout the Dark Ages the monks did indirectly work of great value as missionaries, sacrificing their ideal of seclusion to the necessities of their fellow-men. School teaching, except to the boys who were being trained for monks, was, however, no part of the monastic ideal at ordinary times and places; the universities owed scarcely anything to the monasteries in their inception; and even the nunnery schools of the later Middle Ages grew up in spite of ecclesiastical prohibitions, and mainly under the pressure of financial causes. The direct services of the monks to medicine and art have been exaggerated. While monasticism was perhaps the greatest social force of the Middle Ages, it cannot be really understood except in reference to its environment; and medieval civilization was still very rudimentary in important particulars.

The 11th and 12th centuries saw a considerable revival of learning and civilization in Europe; and the monastic system was found to need a good deal of reform. Between 1020 and 1120 eight new and stricter orders were founded; of these the most important were the Carthusian, Praemonstratensian, and Cistercian. The last aimed simply at a restoration of the exact Benedictine rule, which had everywhere been relaxed. It owed most of its success to S. Bernard (d. 1152), but, by the end of the century, even this reform had spent most of its force. Then came the great revivals associated with the names of S. Francis (d. 1226)

and S. Dominic (d. 1221). The Franciscans and Dominicans, with the Austin friars and Carmelites, were called Mendicants, as opposed to the older Possessionates or owners of property.

In all orders the *individual* was forbidden to possess property; but whereas, in the older orders, the *corporate* endowments were considerable, the four orders of friars repudiated in theory even corporate possessions. This, however, soon broke down in practice; but, to the very end, the friar differed from the monk in depending to a considerable extent upon alms. The Franciscan revival was certainly the greatest religious movement between the Apostles and the Reformation, and contributed greatly to the advancement of learning. From about 1230 onwards, the friars became for a century the most active and successful of university teachers.

This was the last of the great reforms of the Middle Ages, though much was done at different places to avert decay. The more intimate monastic records, which have only lately been systematically published and studied, show a gradual abandonment, not only in practice, but even in theory, of many of S. Benedict's most important prescriptions. Manual labour was practically dead three centuries before the dissolution in England; the prohibition of flesh-food was whittled away, even with papal sanction; and the rule of claustration was so habitually broken that its re-enactment by Henry VIII has sometimes been spoken of as a piece of intolerable tyranny. For the actual methods of that monarch there is little to be said, but the necessity of the dissolution can be inferred from monastic records themselves, and from the complaints of the most orthodox churchmen. It was not that the monks of 1536 were so much more relaxed than their forefathers for many generations past, but society had begun to outgrow the need for monasticism as a great world institution—a growth which, it must be said, owed much to the civilizing influence of monasticism itself in the past.

Its subsequent history only emphasises the lesson of English history. In France, some of Richelieu's greatest difficulties were with the reform of the monks; and the Revolution swept them away as a state institution, a story which has been repeated in nearly every other European country. That the ideal in itself is healthy is proved by its vitality under voluntarist conditions, and even under

the more definite discouragement of persecution. But no sketch of monasticism can be complete which does not do justice to the unselfish, beneficent work of the individual monk, and to the unanimity with which the modern world has decided against all exceptional privileges for these communities.

**G. C. Coulton**  
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**Monastir, BITOLIA, OR BITOLJ.** Town of Yugoslavia. 130 m. N.W. of Salonica, with which it is joined by rail, it was the capital

The Bulgarians took the town in Dec., 1915, during the First Great War; but after the capture of Florina, Sept. 18, 1916, by the Allies, French, Russian, and Serbian troops advanced towards it. The Serbians seized the commanding height of Kaymakchalan on Sept. 30 and pushed on towards the Teherna bend, which they crossed between Oct. 9-17. Meanwhile the French and Russians unsuccessfully assaulted the Kenali line. The Serbs drove the Bulgarians from the Chuks heights on Nov. 10 and took Tepavci, Nov. 13-14, outflanking the Kenali position. The Bulgarians withdrew to the Bistritza; and the Serbs, advancing in the mountains, outflanked Monastir itself. The Bulgarians hastily evacuated the town, which was occupied by the French, Nov. 19.



Monastir, Yugoslavia. General view of the Serbian town, the scene of much fighting in the Balkan War of 1912 and important in both Great Wars

of a vilayet of the same name while Macedonia was under Turkish rule, and was of importance both militarily and commercially. It was a Turkish depot, had manufactures of leather and carpets, and exported grain. Pop. 33,024.

During the course of the Balkan war of 1912 the main Serbian army, after its victory over the Turks at Kumanovo, Oct. 23-24, advanced towards Monastir. The Turks took up a strong position N. of the town on a front of 16 m., which the Serbs attacked on Nov. 15, making a successful assault on the Turkish left wing the next day. A Turkish counter-attack was repulsed on Nov. 17, and a general attack by the Serbs on Nov. 18 drove in the centre of the Turks, who broke and fled, the victors entering Monastir. By the treaty of Bukarest, 1913, it was allotted to Serbia.

In the Second Great War the Germans captured Monastir on April 10, 1941, and by their occupation of this strategic point brought overwhelming forces to bear upon the Greek army fighting the Italians in Albania. It was liberated by the Yugoslav patriot forces on Nov. 6, 1944.

**Monazite.** Mineral of complex composition. It is essentially cerium phosphate but containing also variable amounts of the "rare-earth" elements, thorium, and the radio-active element mesothorium. Monazite is the principal source of cerium, lanthanum, neodymium, praseodymium, and thorium, which have uses in the manufacture of lighter flints (cerium), gas mantles (thorium), in atomic energy investigations (thorium), and cerium salts have application in medicine, ceramics, tanning, dyeing, and optical

glasses. Monazite is a greenish-yellow to brown mineral occurring in residual deposits formed by the weathering of granitic rocks. Commercial deposits are found in India at Travancore, in Brazil, Indonesia, and the U.S.A.; unworked deposits occur in Australia, Nigeria, Nyasaland, and Norway.

**Monboddo, JAMES BURNETT, LORD (1714-99).** Scottish lawyer. He was born at Monboddo, Kincardineshire, and educated at Aberdeen and Edinburgh. He rapidly acquired distinction at the bar, and in 1767 became a lord of session. Far in



Lord Monboddo, Scottish lawyer

advance of his age, he studied the origins of mankind from a new standpoint, and enunciated his views boldly in *The Origin and Progress of Language*, 1773, and *Ancient Metaphysics*, 1779-99. Lord Monboddo died May 26, 1799. He is best remembered from frequent allusions to his theories made in Boswell's *Life of Johnson*.

**Moncalieri.** Town of Italy, in the prov. of Turin. It stands on the river Po, 5 m. by rly. S. of the city of Turin. On a height above the town is a royal palace dating from 1470, rebuilt in the 17th century, and containing a fine series of pictures illustrating the history of the house of Savoy.

**Mönch** (Ger., Monk). Mt. peak of Switzerland, in the Bernese Oberland. It rises between the



Mönch, Switzerland. The snow-clad peak in the Bernese Oberland seen from Interlaken



Eiger and the Jungfrau, has an alt. of 13,468 ft., and is covered with snow and icefields. The first ascent was accomplished by Porges in 1857. See Eiger.

**Monchique.** Town of Portugal, in the dist. of Faro and the prov. of Algarve. It is 12 m. by road N. of Villa Nova de Portimão and 13 m. S. of the station on the Lisbon rly. Beautifully situated on a spur of the Serra de Monchique, alt. 1,476 ft., it is a noted health resort. There is a trade in wine, olive oil, oranges, etc. At Caldas de Monchique, 5 m. to the S., are hot sulphur springs used for skin diseases. Pop. 8,000.

**Monchiquite.** Fine-grained igneous rock of the lamprophyre (*q.v.*) group, named after the Serra de Monchique (*v.s.*). It consists chiefly of olive and purplish augite.

**Monck, CHARLES STANLEY MONCK, 4TH VISCOUNT (1819-94).** British administrator. Born at



4th Viscount Monck, British administrator

Templemore, Tipperary, Oct. 10, 1819, the eldest son of the 3rd viscount, he was educated at Trinity College, Dublin, and became a barrister. In 1849 he succeeded to the Irish title, and in 1852 became M.P. for Portsmouth, being a lord of the treasury, 1855-58. In 1861 he became governor of Upper and Lower Canada, and in 1867-68 was the first governor-general of the new dominion. He was made a baron in 1866. He died Nov. 29, 1894, his elder son succeeding to the peerage.

**Monckton, LIONEL (1862-1924).** British composer. Educated at Charterhouse, he became one of the most popular of musical-comedy composers, and collaborated with Ivan Caryll in a series of light-hearted musical pieces at the Gaiety, *e.g.* The Shop Girl, 1894; The Circus Girl, 1896; The Orchid, 1903; The Girls of Gottenberg, 1907; Our Miss Gibbs, 1909. His greatest successes, however, were The Arcadians (with Howard Talbot) at the Shaftesbury, 1909, and The Quaker Girl, at the Adelphi, 1910. He died Feb. 15, 1924. He married the actress Gertie Millar (*q.v.*).

**Monckton, SIR WALTER TURNER (b. 1891).** British lawyer. He was born at Plaxtol, Kent, Jan. 17, 1891, and educated at Harrow and at Balliol, Oxford.



Sir Walter Monckton, British lawyer

of the council. During the Second Great War he was director-general of the ministry of Information, going to Cairo in 1941 as head of the propaganda and information services. Monckton was attorney-general, May-July, 1945, and the U.K. delegate to the Allied reparation commission at Moscow. He was created K.C.V.O. in 1937, and K.C.M.G., 1945.

**Moncton.** City and port of entry of New Brunswick, Canada. It stands on the Petitcodiac river, 90 m. from St. John and 650 from Montreal. It is a divisional point of the national railway system, which has workshops here. There is a good harbour, and the town has manufactures of machinery, lumber mills, etc. Pop. 22,763.

**Mond, LUDWIG (1839-1909).** Anglo-German chemist. Born at Cassel, Germany, March 7, 1839, and educated at Marburg and Heidelberg universities, he came to England in 1862 to introduce a process for the recovery of sulphur from alkali waste. In 1873, in partnership with Sir John Brunner, he erected works near Northwich for the manufacture of soda by the Solvay or ammonia process. Mond also discovered a method of recovering nickel from low-grade ores. In 1896 he founded the Davy-Faraday Research Laboratory in connexion with the Royal Institution, London. He became a naturalised British subject in 1867, and died in London Dec. 11, 1909. His son, Alfred Mond, became Lord Melchett (*q.v.*). See Brunner, Sir John; Soda.



Ludwig Mond, German-born chemist Elliott & Fry

**Monday.** Second day of the week. The word comes from A.S. Monandaeg (moon's day) and corresponds to the Lat. *Dies Lunae*, cf. Fr. *lundi*. The name Black Monday was originally given to Easter Monday, April 14, 1360, from the darkness and cold

experienced by Edward III of England when lying with his host before Paris. In the north of England the day before Shrove Tuesday is called Collop Monday, from the collops then eaten. The expressions "Cobbler's Monday" and "Saint Monday" in the sense of a holiday are, perhaps, attributable to the old story of the cobblers who, knowing only that their patron saint's day fell on a Monday, made sure of not missing it by keeping every Monday a holiday. Plough Monday is the Monday after Epiphany, when formerly the ploughmen went round with collecting boxes.

**Mondego.** River of Portugal. It rises in the Serra de Estrella, and flows first N.E. and then S.W. past Coimbra to the Atlantic Ocean at Figueira da Foz. Length 130 m. Mondego Bay was the spot at which Wellington (then Wellesley) landed on Aug. 5, 1808.

**Mondofedo.** City of Spain, in the prov. of Lugo. It stands on the river Masma, 12 m. S. of the coast of the Bay of Biscay and 28 m. N. of Lugo. A bishopric from the 12th century, its cathedral dates only from the 17th. Its Franciscan monastery is now used as a public school and theatre. Captured from the Moors in 858, it was taken by the French in 1809. Pop. 11,500.



Mondofedo arms

**Mondovi** (anc. *Mons Vici*). City of Italy, in the prov. of Cuneo. Situated on the N. slopes of the Ligurian Alps, near the river Ellero, 17 m. by rly. E. of Cuneo, it consists of an upper town, alt. 1,835 ft., and a lower town, alt. 1,282 ft. It has a 16th century citadel, a cathedral, and bishop's palace. The church of S. Maria Maggiore and the chapel of S. Rocco were damaged in the Second Great War. Industries include tanning and the manufacture of textiles, pottery, paper, majolica, and machinery. Mondovi was the seat of the Mons Regalis printing press, established in 1472. Here, on April 21, 1796, the French gained a victory over the Sardinians. Pop. 19,600.

**Mondrian, PIETER CORNELIS (1872-1944).** A Dutch painter. Born March 7, 1872, at Amersfoort, he studied at Amsterdam academy of fine arts, and began to paint landscapes which emphasised mass and eliminated detail. In Paris, influenced by the Cubists, he became so ascetic that he found curves too emotional, and concentrated on horizontal and verti

cal lines, convinced that the right angle was the purest "expression of the two opposing forces which constitute life." A pioneer of abstractionism, he went in 1940 to the U.S.A., and there died, Feb. 1, 1944.

**Monel Metal.** Important alloy of copper and nickel. It varies slightly in composition, as it is often made directly from ores containing both nickel and copper; a typical composition would be 68 p.c. nickel, 20 p.c. copper, 2 p.c. iron. Such an alloy would have an ultimate tensile strength of about 37 tons per sq. in. with an elongation of 40 p.c. Malleable in the cold, with high resistance to corrosion, while it retains its strength at high temperatures, the alloy is used for turbine blades, valve parts, etc.

**Monet, CLAUDE OSCAR** (1840-1926). French painter, born in Paris, Nov. 14, 1840. He received his first instruction from Boudin, whom he met in 1855, and in 1862 he entered Gleyre's studio. In 1863 he came into contact with Manet's work, and was



Claude O. Monet.  
French painter

greatly influenced by his new method of painting in bright colours laid on in separate tones. He adopted the method, incorporating with it the results of his own scientific study of light, and was joined by Pissarro, Sisley, Renoir, etc., the group becoming known as the Impressionists. Monet was the real founder of Impressionism.

Among his first pictures were *Déjeuner dans un intérieur*, 1868; and figure pictures, *Camille*, 1866; and *La Japonaise*. He went to live by the Seine, at Argenteuil, Vétheuil, and Giverny, and painted the river in all its moods, and in 1871 he visited England to study the Thames, of which, however, his chief pictures were painted during a later visit, 1901-04. He devoted himself to portraying the sea and rocks on the Mediterranean coast, 1884, and at Belle-Île, 1886. His fame rests chiefly on his three series of pictures of one subject under varying effects of light and atmosphere, e.g. *The Haystacks*, 1890-91. His stated view that the principal "person" in any picture was light represented a revolutionary attitude to painting, and

was widely quoted by admirers of the Impressionists. In his old age he painted studies of his beautiful garden at Giverny, with its famous lily pond. He died Dec. 5, 1926. See illus. under Impressionism. Consult Claude Monet, X. Latham, 1931; C.M. and his Garden, S. Gwynn, 1934.

**Moneta, ERNESTO TEODORO** (1833-1918). Italian publicist. Born at Milan, Sept. 20, 1833, he served with Garibaldi, and was in the Italian army, 1861-67. He edited *La Libera Parola*, 1860-61, and was director of *Il Secolo*, 1867-96. In later life he devoted



Ernesto T. Moneta.  
Italian publicist

himself to the propagation of peace, and presided at the Milan international congress of 1906. In 1907 he was awarded the Nobel peace prize, but he was a warm supporter of Italy's participation in the First Great War. He died Feb. 10, 1918.

**Money** (Lat. *moneta*, mint). Name for whatever is commonly used within a community as a medium of exchange. The introduction of money marked a big social advance on the older method of exchange by barter. In the past money has taken the form of furs, skins, salt, shells, and various metals in their rough form. Coins were a development from the use of metals. The use of paper (notes) and of cheques drawn on banks came with the growth of credit.

At the present time coins and notes (cash) form that section of money used for most retail purchasing, for casual expenditure, and for payment of wages. For larger transactions, cheques are commonly used; and these, though usually covered by money due to the drawer by his bank, may be covered by an overdraft or a loan to him from his bank made against suitable security. Since they serve for the purchase of goods and services, bank loans and overdrafts must be regarded as money. Most economists exclude from that term, however, such bank deposits as are in the nature of permanent or semi-permanent savings, preferring to consider these as investment.

The amount of money is never static; it can be increased or decreased at will, as, indeed, it must be if the constant fluctuations in the volume of trade

being conducted from moment to moment are to be adequately served. Good trade prospects lead to increased employment, the encouragement of overtime, and the offer of higher wages for increased output, all of which mean larger demands for cash upon the banks from employers, to meet which the banks draw more cash from the accounts they keep with the Bank of England, so that the total of notes and coins in circulation rises. Good prospects also affect credit money, consisting of bank deposits and overdrafts, for employers need not only more men, but also more machinery and raw materials, more goods in process of manufacture, and larger factories and shops. They therefore arrange for bank loans and overdrafts, and the cheques they issue against these, when paid in to the accounts of those to whom they are given, go to swell the total of bank deposits, so that both the elements in credit money rise at the same time. The reverse process is equally automatic when trade prospects deteriorate.

Artificially created changes in the volume of money, particularly credit money, can also be used to stimulate or restrict trading activity. The Bank of England can, by operations through the London money market, increase or decrease the total of the balances it holds belonging to the commercial banks, and by this action it either encourages them to lend more freely or decreases their power to sustain the volume of loans and overdrafts actually current. Adjustment of the weight of taxation, not according to the size of the current national budget, but according to the outlook for trade, serves similar purposes; thus if, when trade is poor, taxation be reduced even below budget needs, the extra money left in the hands of taxpayers, being spent on goods and services, acts as a stimulus to trade; while extra taxation imposed during times of prosperity has little adverse effect.

Money as a measure of value is neither static nor absolute, but rather relative. A yard of cloth is at all times 36 ins., but a pound's worth of that material may consist of 36 ins. at one time, 30 ins. at another. Such a variation, in either direction, may take place within a relatively short time so that, e.g. goods which cost 16s. 8d. in one year may cost £1 the next. This can be described either as a general depreciation in the purchasing power of money or as a

general rise in the level of prices. Widespread change in prices is due to changes in availability of goods and services and/or the amount of money available and being spent. Particular rises in price occur through scarcity of particular articles, particular falls through plenty. But whether the change is general or particular, the usefulness of money as a measure of relative value, between different commodities, between commodities and services, and between one period and another, remains.

The price of goods and services must not, however, be confused with the price of money. The price of an article is the amount of money which at a particular moment will pay for it; the price of £100 is the amount of money which is generally paid for the use of £100 for a period of one year, i.e. the current rate of interest charged for money on loan; and there is no necessary equilibrium between this and prices in general. In fact, other things being equal, the price of money is likely to be low when prices of commodities are high, for the volume of money available for lending may force interest rates down, while, from the same cause, prices are forced up. Where output of goods can be expanded, cheap money is likely to stimulate expansion, for to borrow is profitable; while where the volume of goods and services can be maintained at a level equal to demand, cheap money is likely to reduce the general level of prices because it tends to lower production costs.

In the U.K. the interest rate charged by the Bank of England and the rate fixed for current borrowing by the Treasury are the chief factors determining the general level of interest rates. It has become the aim of government financial policy so to adjust both the volume of money and its price that the national economic machine shall be maintained at maximum output, i.e. that demand shall at all times be sufficient to support full employment of both man-power and technical capacity. To attain the highest possible standard of living it is necessary that, by every means of technical equipment and skill, the output of every man is at the maximum. From savings comes capital, in the form of machinery, factories, transport, etc. So far as the saver is concerned, his savings represent deferred purchasing power, but, collected and accumulated through the financial channels maintained

for the purpose, they are used to provide the capital goods without which industrial output would be very narrowly limited. Such investment would, however, be impossible without the money put by by a multitude of individuals as a future claim on production. Money is thus seen to constitute a vital factor in economic development. See Barter; Bill of Exchange; Cheque; Exchange, etc.

**Money.** SIR LEO GEORGE CHIOZZA (1870-1944). British economist and politician. Born at Genoa, June 13, 1870, of mixed Italian and English parentage, he settled in England, and in 1903 assumed the surname of Money. He was a Liberal M.P. for North Paddington, 1906-10, and for East Northants, 1910-18; later he joined the Labour party, but did not secure election. He was knighted for his services as parliamentary private secretary to Lloyd George, then minister of Munitions, 1915; from 1916 to 1918 he was parliamentary secretary to the ministries of Pensions and of Shipping, and chairman of the National Maritime Board, 1917-18. He died Sept. 25, 1944. His books include *Riches and Poverty*, 1905; *The Nation's Wealth*, 1914; *The Triumph of Nationalisation*, 1920; *Can War Be Averted?*, 1931; *Product Money*, 1933; and several books of verse. He edited the economic, financial, industrial, engineering, and sociological sections of the 1929 edition of the *Encyclopaedia Britannica*.

**Money Bill.** Any proposal put before parliament which involves the expenditure of public money. The rules and procedure for the passage of such measures into law differ from those of ordinary bills thus: (1) They must be introduced by a minister of the crown; no private member can introduce one. The reason for this is that ministers are responsible for finding the necessary money, and their arrangements would be upset if they had to find sums which were no part of their plans. (2) They can only originate in the house of commons. By resolutions of 1678 and 1860 the commons established the sole right of introducing and altering money bills, and this was strengthened by the Parliament Act of 1911. (3) By the Parliament Act the house of lords was deprived of the right of rejecting money bills, its only remaining power over them. Disputes as to whether a certain measure is or is not a money bill are now avoided by a defining clause in the Parlia-

ment Act which leaves the decision in the hands of the Speaker. See Parliament Act.

**Moneylender.** One who lends money, but especially one who does so for a livelihood. In the U.K., as in other countries, special legislation has been found necessary for the protection of the public against moneylenders. By the Moneylenders Act of 1900 a moneylender is defined as a person whose business is that of lending money, or "who advertises or announces himself or holds himself out in any way as carrying on that business." Pawnbrokers, bankers, insurance companies, friendly societies, building societies, loan societies, and persons or corporations who lend money merely incidentally for business purposes are excepted.

Every moneylender must annually obtain a certificate from the local police court. He also requires an annual licence from the Customs and Excise, but this is granted automatically on production of his certificate and payment of £15. A moneylender can carry on business only in the name and address authorised in his certificate. Contracts for the payment of money lent by him are unenforceable unless the terms are set out in a writing signed by the borrower, which shows what rate of interest is being charged. A copy must be given to the borrower within 7 days. The court will always re-open a transaction between moneylender and borrower if they consider the interest is excessive and the transaction is harsh and unconscionable. Interest in excess of 48 p.c. per annum is presumed to be excessive unless the contrary is proved. No charge may be made for costs or expenses. Nor may a moneylender send an advertising circular to anyone except on a written request. He may advertise in a newspaper or periodical or by poster at his address, but the advertisement must contain only his name and the address where he carries on business with any telegraphic address and telephone number, any former address, a statement that he lends money with or without security, the highest and lowest sums he lends, and the date when his business was established. He must not employ canvassers. A moneylender cannot sue for money due to him on a loan unless he begins his action within 12 months of his right to sue, according to any written acknowledgement or part payment by the debtor.

**Money Market.** General term for the whole financial organization concerned with the provision and employment of money available for use for short periods only. In London there is no particular building or exchange devoted to such operations, but the offices of the institutions and firms concerned are for the most part centred around Lombard Street, Threadneedle Street, Bishopsgate, and other adjoining streets within the City area. Nor, strictly speaking, is the money bought and sold—it is rather borrowed and lent, and the prices quoted are rates of interest charged for its use. In one important section, however, the dealings concern the purchase and sale of bills and therein the instrument involved passes from seller to buyer at a discount. Thus, loan rates may, for example, be given as Day to Day  $\frac{1}{2}$  to  $\frac{3}{4}$ , meaning that money loaned on a day-to-day basis could be borrowed at from 10s. to 15s. per cent per annum, while the fine trade discount rate for 3 months being quoted at 1 to 1 $\frac{1}{2}$ , would indicate that such a bill could be purchased at a discount of from £1 to 30s. per cent per annum.

#### Banks and Discount Houses

The pivot of the market is the Bank of England, exercising a controlling function as agent of the Treasury, and the principal institutions with short-term money to lend or invest in this market are the British banks and those Empire and foreign banks having London offices. To a lesser but important extent, the discount houses supplement the funds of the banks, and many hundreds of millions of pounds are constantly available to borrowers. The chief of these are the British government, the largest English city authorities, the stock exchange, and the discount houses themselves. The latter have, and use, substantial funds of their own, but so large are their operations that they also re-borrow heavily on the bills they have discounted for traders and others needing immediate cash in exchange. These bills arise from both home and foreign trade, and an important source of the latter is a specialised, subsidiary section of the market comprised of the acceptance houses or merchant bankers. Constantly linking buyers and sellers are the body of other specialists called bill brokers, whose function it is to negotiate the dealings between the lending banks and the discount houses. Although both foreign

money (from overseas banks) and foreign bills had, even by 1946, commenced once more to flow to the London money market, the discount houses' operations were still, as throughout the latter years of the Second Great War, concerned largely with short-term government bonds, as a result of which they contributed to the maintenance of cheap borrowing by the state.

**Money Order.** Document issued at certain post offices to enable a person to send money to someone else. When the money is paid in, the names of the payer and of the payee are taken down, and are sent to the particular office at which the order is made payable; without this advice the money will not be paid. Money orders are thus different from postal orders, which can be transferred like cash. The highest amount for which a money order is issued in the U.K. is £40, and the charge varies from 4d. to 1s. Money orders can be sent by telegraph, and can, like cheques, be crossed for greater security.

**Moneywort** OR CREEPING JENNY (*Lysimachia nummularia*). Perennial creeping herb of the family Primulaceae, native of Europe. Its prostrate stems creep to a length of about two ft., and bear roundish heart-shaped leaves in pairs, and cup-shaped, solitary yellow flowers. A species often confused with it is the yellow pimpernel (*L. nemorum*), with shorter stems, yellow green larger leaves, and smaller flowers.

**Monfalcone.** Town of Italy. It is 10 m. S.W. of Gorizia and 16 m. N.W. of Trieste, near the Adriatic, is noted for its mineral waters, and was prominent during the First Great War, being taken from the Austrians and then lost by the Italians. It passed to Italy under the peace treaty, July 16, 1920. During the Second Great War, New Zealanders advancing on Trieste made their first contact with Yugoslav partisans of Tito's forces here, May 1, 1945. Pop. 10,000. See Caporetto, Battle of; Gorizia; Italy.

**Monforte de Lemos.** Town of Spain, in the prov. of Lugo. It stands on the river Cabe, and is a junction on the rly. from Leon, 148 m. to the E., to Corunna and Vigo. It has ruins of a medieval castle, a Benedictine monastery,

now utilised as a hospital, a fine Renaissance church, and a Jesuit college. Chocolate and linen are manufactured, and there is trade in timber and cattle. Pop. 16,000.

**Monge, GASPARD** (1746-1818). French mathematician. He was born at Beaune, May 10, 1746, and educated at Lyons, where at the age of 16 he became teacher of physics. In 1768 he was appointed professor of mathematics and in 1771, of physics at the military school of engineering at Mezières. In 1783 he moved to Paris, and became examiner of naval pupils. Here he wrote his *Traité Élémentaire de la Statique*, 1786. He was minister of marine 1792-93.

After a visit to Italy in 1796 to receive the Napoleonic plunder of antiquities and *objets d'art*, he accompanied Bonaparte to Egypt and Syria. In 1805 he was made a senator and Comte de Pelouse, but lost both dignities on the Restoration. He died July 28, 1818.

**Monghyr.** Dist. and town of India, in the Bhagalpur div. of the state of Bihar. The dist. is a low-lying alluvial tract drained by the Ganges. Nearly half the cultivated area yields two crops annually.

Rice, maize, and tobacco are the most important. The town is an important trading centre on the right bank of the Ganges, here crossed by the rly., and opposite the entry of the Burh Gandak river, and contains an up-to-date printing press and cigarette factory, which works the increasing supplies of locally grown tobacco. From the 12th to the 18th century it was a Mahomedan stronghold. Area, 3,975 sq. m. Pop., dist. 2,504,544, town, 63,114.

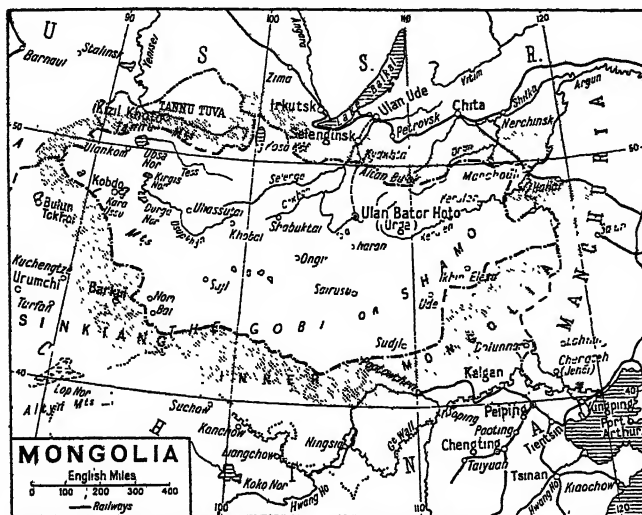
**Mongol.** Name denoting a racial stock in Mongolia, with offshoots in the Manchurian Amur province and in Chinese Turkistan. Estimated at 1,800,000, they form, with the Turkic and Tungus stocks the round-headed Altaian branch of the straight-haired yellow race. The coarse, black hair is scanty except on the scalp. The character-



Gaspard Monge, French mathematician



Moneywort. Flowering stems of this creeping herb



Mongolia. Map of this vast outlying district north of China, bounded by that country, Siberia, and Manchuria

istic Mongolian fold of skin over the inner angle of the eyelids, and the lifted outer angle, produce the well-known slant-eyed effect.

Sturdy, flat-faced, with prominent cheek-bones, they comprise W. Mongols or Kalmucks, and E. Mongols, including the six inner leagues, the Chakhar, and the outer Khalkas. The Buryat are much Siberianised. Nomad tent-dwelling hunters and herdsmen, essentially shamanist, their vigour has been sapped by lamaism; in Afghan Turkistan the Aimak and Hazara are muslimised. Cradled in the upper Amur basin, they shared in the political confederacies which dominated Central Asia for centuries and, under Jenghiz Khan and his successors, extended the 13th century empire of Tartary from the Dnieper to the Pacific. Under Kublai Khan a Mongol dynasty, 1280-1368, was imposed upon China. Their Altaic language is written in syllabic signs resembling knots on the left of a vertical stem, based upon Uiguric, and introduced in 1240.

In various forms—Mongolian, Mongoloid—the term also designates the whole yellow race, one of the three primary divisions of mankind. In this sense it embraces numerous stocks marked by much racial admixture, and climatic and linguistic differentiation. Thus the northern Mongols include, with the Altaians, the Koreans and Japanese, the Finno-Ugrians, the Palaesioasiatic or E. Siberians, and more remotely the Eskimos and American Indians. The southern Mongols comprise the Tibetan, Chinese,

and Indo-Chinese peoples, and more remotely the Malays. See Asia; Ethnology; Kalmuck.

**Mongolia.** Outlying district N. of China, bounded to the N. by Siberia, S.W. by Sinkiang, S.E. by China, and E. by Manchuria. Surrounding the Gobi desert, 3,000 ft. above the sea, it forms an intermediate region between the Tibetan plateau and the Arctic lowland of Siberia. In winter the cold is intense; in the summer the slight rains produce pasture and fodder shrubs for the sheep, goats, horses, and camels of the nomadic inhabitants, Mongols or Kalmucks. The chief rivers are the Irtysh, Selenga, and Orkhon, of which the last two are navigable. Area about 1,875,000 sq. m. Pop. about 750,000 Mongols and 100,000 others, mostly Russians and Chinese. The Lamaic religion is a powerful force, and 30 p.c. of the male pop. are Lamas.

An indefinite boundary divides Mongolia into the Chinese prov. of Inner Mongolia and the independent Outer Mongolian People's Republic. Outer Mongolian autonomy dates from the end of 1911, and various agreements of 1912-15 secured the region from colonisation by the Russians or Chinese. These agreements were denounced by China in 1919. In 1924 Outer Mongolia adopted its present Soviet constitution, codified in 1946, but did not join the Soviet Union. The

parliament, called the Great Huruldan, is elected by universal suffrage granted at the age of 18; it appoints the 30 members of the executive or Little Huruldan. Most of the trade is handled by the Soviet-backed Mongol Central Cooperative Society, and is in livestock and animal products. There are some gold mines. The chief town, Urga, was renamed in 1924 Ulan Bator Hoto, or town of the red heroes; its pop. is about 100,000, and it has an airport and a radio station.

The unit of Mongolian currency is the tukhrik, nominally equal to one-half U.S. gold dollar, and divided into 100 mongo. Communications are mainly by caravan, though a rly. is under construction from Urga to Chita in Siberia.

China formally recognized the independence of the Mongolian republic (Jan. 5, 1946) following a plebiscite held on Oct. 30, 1945. On Feb. 27, 1946, Outer Mongolia signed a treaty of friendship and mutual aid with the Soviet Union. Pop. (1932) 540,000, including 90,000 Russians and 5,000 Chinese. **Mongolism.** Form of mental deficiency with physical characteristics (round head, oblique eyes, flat nose, squat figure) resembling those of the Mongolian race. See Idiocy.

**Mongoose** (*Herpestes griseus*). Small carnivorous mammal of the family Viverridae, which includes



Mongoose. Specimen of *Herpestes urva*, a species which lives on crabs and shell-fish

the civet-cats, and is restricted to the Old World. More closely allied to the ichneumon, the Indian mongoose is a smaller animal with greyish fur and long, bushy tail. It is famous for the prowess it displays in destroying snakes, even the deadly cobra failing to use its natural defence against an enemy so agile. See Civet.

**Monica** (332-387). Saint and mother of S. Augustine of Hippo. Born of pious parents in good circumstances, she was married at an early age to Patricius, who became converted through her good example. She had two sons, one of whom, famous as S. Augustine (q.v.), always attributed his conversion to her prayers.



**Monier-Williams, Sir MONIER** (1819-99). British Orientalist. He was born in Bombay, Nov. 12, 1819, came to England when a child, and was educated at King's College, London, and Balliol College, Oxford. He was successively professor of Oriental languages at the East India College and of Sanskrit at Oxford, where the Indian Institute was founded mainly at his instigation. Knighted in 1886, he died April 11, 1899. His most important works are *Hinduism*, 1877; *Buddhism*, 1890; *Brahmanism*, 1891; *Sanskrit-English Dictionary*, 1899.

**Monifeth.** A police burgh of Angus, Scotland. It stands on the N. side of the Firth of Tay, 6 m. E. of Dundee, and has a rly. station. Rugs and carpets are woven, and machinery is manufactured. The place has the amenities of a seaside resort and two golf courses. Pop. 3,300.

**Monism** (Gr. *monos*, alone, single). Theory which refers all the phenomena of the universe to a single principle, whatever this principle may be. Thus materialists, pantheists, idealists, hylozoists, are all monists. Monism is thus opposed to duality and plurality. While forced to acknowledge the existence of contraries (body and soul, mind and matter) it attempts to remove them by explaining them as modifications of a single fundamental principle. Thus, mind and matter and their phenomena are manifestations of some one substance which is neither. The term is also applied to that view of the world which, denying anything transcendent (beyond the material universe), regards the world as a connected whole varying in accordance with fixed laws inherent in itself, to which even man is subject. See Theism.

**Monitor** (Lat., one who warns). Term applied to a senior pupil in a school selected to supervise junior pupils in the absence of a teacher. The feminine form is *monitress*. In zoology a genus of lizards peculiar to the Old World has received the name of monitor from a notion that they give warning by hissing of the approach of a crocodile. A special type of small warship, carrying one or two powerful guns and having a shallow draught is known as a monitor. Fire brigades sometimes use a device known as a monitor to control the nozzle of a hose when the pressure of water is such that it cannot be directed by one man. From

the outset of the Second Great War men and women were employed by most belligerent countries to listen systematically to radio broadcasts put out by their enemies and by neutral countries; in Great Britain these people were called monitors, and their work was known as monitoring.

**Monitor** (*Varanus*). Genus of large lizards of the family Varanidae. Including about 30 species, they are found in Africa, S. Asia, Australasia, and Oceania. Distinguished from other lizards by their long forked tongue which retracts into a basal sheath, as in the snakes, they are long in the body, have no dorsal crest, are thickly covered with small scales, and some attain a length of over 8 ft. In colour they range from blackish to greenish brown and grey. Most live in burrows near water, and are carnivorous, eating birds, small mammals, eggs, and frogs. Monitors swim well with the aid of their long and powerful tails, used also as a weapon of defence. They are eaten by the natives in parts of India, and their eggs are highly esteemed as food in Burma. See Lizard colour plate.

**Monitor.** Armoured vessel of slow speed, light draught, and low freeboard, designed to operate in shallow waters. Her sides are heavily "blistered," i.e. have great out-curving bulges upon them for resisting torpedo attack.

Monitors carry only one or two large guns and offer a small target. The first was built by John Ericsson and used in the American Civil War. By 1914 the British navy possessed only a few monitors, but they were used in the First Great War off the Belgian coast. Soon these vessels were capable of mounting an 18-in. gun. British monitors in the Second Great War were in action in Libya and in the D-day bombardment of the French coast. The Russians employed monitors in the defence of Stalingrad and on the Danube. See American Civil War; Ericsson, John; Hampton Roads; Merrimac; Royal Navy.

**Moniz, ANTONIO EGAS** (b. 1874). Portuguese physiologist. A professor of Lisbon univ., he invented, 1927, cerebral angiography, a method of diagnosing and locating brain tumours. The first man to perform the operation of prefrontal leucotomy, Nov. 12, 1935,

he shared the Nobel prize for medicine, 1949, being the first Portuguese so honoured. Also a diplomatist, Moniz was Port. envoy to Spain, became foreign minister 1918, and headed the Port. delegation to the peace conference 1919.

**Monk** (Lat. *monachus*, from Gr. *monos*, alone). Solitary person, and specifically a male member of a monastic community. Originally the word was applied to hermits who passed their lives in solitude in desert places. Later these solitaries were collected in villages or lauras, where they dwelt apart, but met for divine worship and were under the control of an abbot. From this developed the practice of living in community in a coenobium or monastery—but the old name was maintained.

Until the 13th century the name monk was in general use for a member of a religious order, but the rise of the friars introduced a new type of religious life, and the term became restricted to members of the older orders of enclosed monks as distinguished from the wandering friars. Strictly speaking, it is now applied only to Benedictines and the various ancient orders which have sprung



**Monitor.** The British monitor, H.M.S. Roberts, completed in October, 1941

from them, or were modelled on the Benedictine Rule, e.g. Cistercians, Augustinians, and Carthusians. See Asceticism; Basilian Monks; Benedictine; Black Friar; Carmelites; Carthusians; Cluniac; Hermit; Monasticism.

**Monk, GENERAL GEORGE.** This English soldier and politician, prime mover in the Restoration of Charles II, was rewarded with the title of duke of Albemarle, and is described under that heading.

**Monkey.** Popular name for all mammals of the Order Primates, sub-order Pithecoidea, with the exception of man and the anthropoid apes. Monkeys generally are distinguished from man and apes by their smaller size and the shape of the molar teeth, while individual groups have tails, naked callosities on the buttocks, and cheek pouches. The narrow, laterally compressed breastbone invariably



Monkey Flower. Foliage and flowers of the N. American herb

distinguishes the skeleton. It is usual to divide the monkeys into two great families, the Catarrhini of the Old World and the Platyrrhini of the New. The main points of distinction are that the nostrils of all the American species are separated by a broad septum and more laterally situated than in those of the Old World; that they have four more teeth; and that none has the cheek pouches and the callosities on the buttocks that many of the latter possess. Many have prehensile tails, which is not the case with any of the species belonging to the Old World. The New World monkeys are, however, much less agile on the whole than the Old World monkeys, neither are they as intelligent.

Monkeys occur throughout Asia, Africa, and the hotter parts of the American continent. In Europe they still linger on the Rock of Gibraltar, but were formerly much more widely distributed, the fossil remains of one species of macaque occurring in Essex. Nearly all monkeys are arboreal in habit, and most are very agile in their movements. They are usually found in small companies under the leadership of old males. They may be regarded as omnivorous, fruit, nuts, and leaves constituting their chief diet; but insects and small birds are eaten, while few monkeys can resist the temptation of robbing a bird's nest of its eggs. With the exception of a few of the larger species, monkeys are timid and inoffensive in disposition.

Economically they are of small importance, though the skins of certain species are used as fur, and in some districts the bodies are eaten by natives. They often do damage to orchards and growing crops. As pets, monkeys have long been popular on account of their semi-human ways and amusing antics; but their delicacy of constitution usually makes their life

in captivity short. *See* Animal; Ape; Baboon; Capuchin; Colobus; Douroucouli; Diana Monkey; Howling Monkey; Marmoset; Primates.

**Monkey Flower** (*Mimulus lewisii*). Perennial riverside herb of the family Scrophulariaceae. Native of N. America, it has oval-oblong, coarsely toothed leaves, and large yellow tubular flowers with widely extended mouth. Some varieties are richly spotted, or blotched with crimson, maroon, or purple. *M. moschatus*, a much smaller, more delicate plant, is the familiar musk of window-gardens.

**Monkey Glands.** The popular name for the transplanted sexual glands of animals used in W. F. Voronov's experiments in rejuvenation. *See* Voronov.

**Monkey Pot** (*Lecythis ollaria*). Large tree of the family Lecythidaceae, native of tropical America. It has alternate, leathery leaves, and large six-petaled flowers. The fruit is a hard, woody capsule with a distinct lid, and of sufficient size to be used as a water-vessel by the natives. When the large, bitter, hard-shelled seeds are ripe, the lid falls off to allow their escape. *L. zabucajo* supplies the Sapucaya nuts, which

are larger than, and superior to, Brazil nuts. The bark of *L. ollaria* consists of many thin layers of a papery material, which the Indians separate and use for cigarette wrappers.

**Monkey Puzzle Tree.** Popular name for the Chile pine (*Araucaria imbricata*). A native of Chile, it was introduced into Great Britain in 1796. It needs a rich soil. *See* Chile Pine.

**Monkey Trial.** Popular name given to a certain legal action heard at Dayton, Tennessee, July 1925, when J. T. Scopes, a teacher of biology at the local high school, was prosecuted for teaching the theory of evolution to a boy of 14. The state legislature had just passed a law forbidding teachers in any state educational establishment to teach "any theory that denies the story of the Divine creation of man as taught in the Bible." Scopes was deliberately challenging this law. The case attracted widespread attention as a direct conflict between religion and science, the latter being popularly accepted

as supporting the theory that man is descended from monkeys. Enormous publicity, much of it in gross taste, was given by the newspapers, and Dayton, now nicknamed "Monkeyville," was crowded for the period of the trial. W. J. Bryan (*q.v.*) appeared for the prosecution, being opposed by Clarence Darrow, a well-known agnostic; and a feature of the trial was Darrow's merciless questioning of Bryan as to the latter's own fundamentalist religious beliefs, conducted throughout an afternoon so hot that the court was held out of doors. The judge eventually stopped this examination and expunged it from the record. As no scientific evidence was forthcoming Scopes was found guilty and fined. As a tragic climax, Bryan died on July 26, less than a week after his appearance on the witness stand. The defence later brought the case before the state supreme legislature

which again found for the prosecution and forestalled a further appeal by freeing Scopes on a technical point.

**Mon-Khmer.** A sub-family of agglutinative languages spoken in S.E. Asia. It forms with the Munda sub-family the Austroasiatic family. The Mon occupied the Irawadi valley



Monkey Pot, leaves and fruit. Inset, seed, which has a hard shell

before the Burmese immigration; the Khmer are a mixed Indonesian people in Cambodia. In India the seven languages of Mon-Khmer are spoken by probably half a million people. Related dialects, spoken by unenumerated aboriginal tribes in Indo-China, are remnants of the speech dominant in Further India before the Tibeto-Chinese advent. *See* Austric; Talaing.

**Monkhouse, ALLAN NOBLE** (1858-1936). British writer. Born at Barnard Castle, May 7, 1858, he was privately educated, and from 1902 to 1932 was with the Manchester Guardian, first as dramatic critic and finally as literary editor. He associated himself with the repertory theatre movement in Manchester and elsewhere. He died Jan. 10, 1936. An exquisite stylist, he is remembered for novels and sketches of Manchester life and for war plays, notably *The Conquering Hero*, 1924.

**Monkhouse, WILLIAM COSMO** (1840-1901). British poet and critic. Born in London, March 18,

1840, and educated at S. Paul's school, he entered the Board of trade in 1857, and eventually became an assistant secretary. He died July 2, 1901. Monkhouse wrote a novel, *A Question of Honour*, 1868, but his best work was probably done as an art critic. He wrote a *Life of Turner*, 1879; *The Italian Pre-Raphaelites*, 1887; *In the National Gallery*, 1895; *British Contemporary Artists*, 1899. His verses included *The Christ upon the Hill*, a ballad. Two other volumes are *A Dream of Idleness*, 1865; *Corn and Poppies*, 1890.

**Monkland Canal.** A disused waterway of Scotland. It runs from Port Dundas on the Forth and Clyde Canal to Coatbridge. It is included in the Forth and Clyde navigation, and its length is 13 m. Begun in 1761, it was finished in 1790, to carry the coal of the Lanarkshire coalfield. In 1846 it was acquired by the Forth and Clyde Canal, and in 1867 the united system passed into the hands of the Caledonian rly. (later L.M.S.). Monkland is the name of two large parishes in Lanarkshire, New and Old. Both are on the N. Calder, in a coal mining area.

**Monkshood** (*Aconitum napellus*). Perennial herb of the family Ranunculaceae. A native of Europe and Asia, it has a black, spindle-shaped rootstock, and the alternate leaves are cut into sharply toothed lobes. The large, hood-shaped, dark-blue flowers are clustered round the upper part of the stem. The whole plant is virulently poisonous, and from its root is obtained the drug aconitine. See *Aconite*.

**Monkswell, ROBERT PORRETT COLLIER, BARON** (1817-1886). British law officer. Born at Plymouth, June 21, 1817, and educated there and at Trinity College, Cambridge, he was called to the bar in 1843 and was Liberal M.P. for Plymouth 1852-1871 and Q.C. from 1854. Solicitor-general 1863-66, he was appointed attorney-gen. 1868, and a member of the new judicial committee of the privy council 1871, having qualified by sitting for a few days as judge in the court of common pleas. He was made a peer in 1885, and died Nov. 3, 1886.

**Monkwearmouth.** District of Sunderland, Durham, England. Formerly a village, it stands on the N. side of the Wear, with a rly. station. A bridge over the river connects it with Sunderland. Historically it is noteworthy because in the 7th century Benedict Biscop founded a Benedictine monastery here. The parish church of S. Peter stands on the site, and

contains a porch and other remains of the monastic church. Monkwearmouth began to be an industrial centre about 1775, when shipbuilding started. Other industries are ironworks and coal mines.

**Monmouth.** City, borough, and the county town of Monmouthshire, England. It stands at the



Monmouth arms

junction of the Monnow and the Wye, 19 m. S.W. of Hereford, with rly. stations. It is almost surrounded by hills. Troy, on the other side of the Monnow, is part of the borough. The chief buildings are the modern church of S. Mary, the old church of S. Thomas Becket, and the shire hall. There is a grammar school founded in the 17th cent., and the town has statues of Henry V, who was born in the castle here, and of C. S. Rolls, the aviator, whose family was long connected with it. Little remains of the castle, but Monnow bridge is still protected by a gateway. The city is the seat of a bishop, and gives its name to a co. constituency.

Monmouth was fortified by the Saxons, and continued to be a border fortress as long as the Welsh were hostile to the English. It became a borough in the 13th century, and was first represented in parliament in the 16th. It was long famous for the caps made here, mentioned by Shakespeare (Henry V). The fair in Whit-week goes back nearly 400 years. Market days, Mon. and Fri. Pop. 4,731.

**Monmouth, JAMES SCOTT, DUKE OF** (1649-85). English prince. The son of Charles II by Lucy Waltershe was born at Rotterdam, April 9, 1649, during his father's exile. The king provided for him, although some doubted the paternity, and after the Restoration had him at court. In 1663 he was made duke of Monmouth, and in the same



James Scott, Duke of Monmouth

year was provided for by a marriage to Anne Scott, wealthy countess of Buccleuch, being created duke of Buccleuch. He saw service with the fleet against France in 1678, and against the Covenanters, 1679.

When the question of the succession to the throne became urgent, Monmouth was taken up by Shaftesbury and those who desired to exclude James, duke of York. Public feeling ran high, and at one time Monmouth was in banishment, at another he was hailed as the coming king. In 1683, just after the Rye House plot, in which he was concerned, the duke took refuge in Holland, where he was when Charles died and James became king. In Holland Monmouth met Argyll and other malcontents, and an expedition to England was arranged. The duke landed at Lyme Regis and was greeted as King Monmouth in the

western counties. With a rabble of half-armed and untrained men he attacked the royal troops at Sedgemoor, July 6, 1685, but this last battle to be fought in England was his disaster. He fled to the New Forest, but was taken at Ringwood and beheaded in London, July 15. Monmouth left two sons: James, earl of Dalkeith, the ancestor of the dukes of Buccleuch; and Henry, earl of Deloraine. Apart from charm and a striking appearance, the duke had little to recommend him. See *Sedgemoor*; consult James, Duke of Monmouth, E. D'Oyley, 1938.



Monmouth. Fortified 13th century gateway on the bridge over the Monnow

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Monmouth. Silver medal struck by his adherents to commemorate the execution of the duke  
British Museum

Apart from charm and a striking appearance, the duke had little to recommend him. See *Sedgemoor*; consult James, Duke of Monmouth, E. D'Oyley, 1938.

**Monmouthshire.** One of the English counties, although for some legal purposes it is considered with



Monmouthshire  
county seal

Wales. In the west of England, it is bordered by Wales proper and has a coastline on the Severn estuary of 21 m. The surface is generally hilly, especially in the N. and N.W., where several summits exceed 1,500 ft., the highest being the Sugar Loaf (1,955 ft.). Along the coast it is protected by earthworks.

The chief rivers are the Wye, Usk, Ebbw, Rhymney, and Monnow. Monmouth is the co. town, other boroughs being Newport and Abergavenny. Tredegar, Abertillery, Abersychan, Ebbw Vale, Abercarn, Bedwellty, Blaenavon, Llantarnam, Panteg, Pontypool, Risca, Rhymney, and Chepstow are other places. The chief industry is coal mining, the S. Wales coalfield stretching into the county. Coal is found in the valleys in the W., where populous towns have sprung up. Wheat, rye, and other crops are grown, but much land is given up to sheep. Orchards are plentiful. The county also contains magnificent scenery. It is served by rlys. and canals. Six members are returned to parliament. The co. is in the Oxford circuit and Monmouth diocese.

Originally part of the Welsh kingdom of Gwent, Monmouthshire remained in Wales until made a shire in 1536. It had been conquered by King Harold, and herein the Normans built castles which for long were maintained to protect England from the inroads of the Welsh. The most notable were perhaps those of Chepstow, Raglan, Caldicot, Abergavenny, Penhow, Monmouth, and Skenfrith. The county contains Tintern and Caerleon. Area, 546 sq. m. Pop. 434,958.

In literary matters the co. claims Geoffrey of Monmouth and William Thomas, Welsh poet. Jeremy Taylor was imprisoned in Chepstow Castle. The Wye and Tintern Abbey inspired famous lines by Wordsworth. W. H. Davies was born at Newport and uses place-names of this co. in his verse.

**Monmouthshire Regiment.** Territorial regiment of the British army. Formed in 1860, it served with the S. Wales Borderers in the S. African War and helped to take Johannesburg. When the Territorial Force was established in

1907, its three battalions became the Territorial ones of the S. Wales Borderers. One of the first T.A. units to land in France in 1914, it served with the 29th div. throughout the First Great War. Between 1915 and 1918 eleven battalions were raised. Two service battalions were with the 21st army group in France, Holland, and Germany in the Second Great War.

**Monnier, PHILIPPE** (1864–1911). Swiss novelist, the son of Marc Monnier (1829–85), playwright and translator. A native of Geneva, born Nov. 2, 1864, he wrote in French, and took a place with Edouard Rod, Isabelle Kaiser, and other Swiss writers accepted in French literature. His chief books are *The Quattrocento*, 1901; *Causeries Genevoises*, 1902; *Venice in the 18th Century*, 1907. He died July 21, 1911.

**Monobel.** Coal mining explosive. It is 80 p.c. ammonium nitrate sensitised with 10 p.c. nitroglycerine absorbed on 10 p.c. wood meal.

**Monoceros** OR THE UNICORN. Large constellation lying in the celestial equator E. of Orion. It is without any conspicuous stars, but is noted for its multiple stars, star clusters, and nebulae.

**Monochlamydeous** (Gr. *monos*, alone, single; *chlamys*, cloak). Term applied to plants whose flowers have a single envelope or calyx. See Flower.

**Monochord** (Gr. *monos*, single; *chordē*, string). Musical instrument with a single vibrating string. Usually it is regarded as a device for measuring or comparing frequencies. The fundamental frequency ( $n$ ) of a stretched wire passing over two "bridges" distance  $l$  apart is given by

$$n = \frac{1}{2l} \sqrt{\frac{T}{m}},$$

where  $T$  is the tension of the wire and  $m$  its mass per unit length.

**Monochrome** (Gr. *chrōma*, colour). In art, a picture executed in different tints of one colour, the tints representing light and shade. Thus a sepia (*q.v.*) drawing is a monochrome, but the term is not confined to any one medium.

**Monocline** (Gr. *klinein*, to incline). In geology, term used for a change in inclination or dip of the strata of rocks, which afterwards continue in their general original direction. Such sudden changes in rock strata occur in the Rocky Mts. on a large scale. See Anticline; Geology; Rocks; Syncline.



Monmouthshire. Map of the English county on the border of South Wales

**Monocotyledon** (Gr. *monos*, single; *cotyledon*, cup-shaped cavity). One of the two well-marked divisions of the Angiosperms, or flowering plants, the other being dicotyledon (*g.v.*).

**Monoculture.** Term for a system of agriculture in which the land in a given area is devoted to one crop continuously. The cultivation of rice in the Nile delta and the rubber plantations of the Far East are examples in the Old World; but monoculture has been far commoner on the virgin soil of the New; e.g. cotton in south-east U.S.A.; wheat in the middle west of Canada and the U.S.A.; sugar and coffee in Brazil. Exhaustion of the soil, overproduction, or a change in demand brings ruin and even starvation to cultivators. There is a slow but steady move away from monoculture, particularly in the cotton area of the U.S.A. To avoid the dangers of monoculture the E. Africa ground nut growing scheme started by the British govt. in 1947 included development of a suitable rotation of crops.

**Monoecious.** Botanical term. It is applied to plants, e.g. *Fucus spiralis*, which form in one individual both male and female gametes. It is also loosely applied to flowering plants, e.g. hazel, which form both stamen and carpels neither of which are really sexual though they contain gametophytic structures.

**Monogenism** (Gr. *monos*, single; *genos*, kind). Theory attributing to all mankind descent from one original stock, and specifically from a single pair. Its alternative, polygenism, accounts for the physical diversity of the human race by postulating for man a plural origin. See Man.

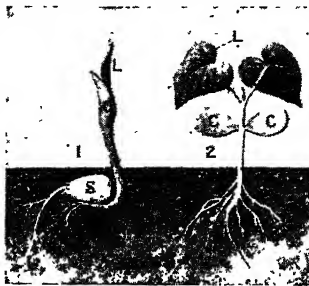
**Monogram** (Gr. *monos*, single; *gramma*, letter). Term usually applied to a combination of two or more letters into a single cipher, used as a kind of heraldic device in lieu of crest or arms on seals, carriages, etc.; by artists and craftsmen



Monogram combining letters ALNM

for authenticating their work, e.g. pictures and pottery; in commerce as trade-marks; and, generally, for various similar purposes. A familiar example is the sacred monogram embroidered on ecclesiastical vestments. See Labarum.

**Monograph** (Gr. *monos*, single; *graphein*, to write). Book or pam-



Monocotyledon. Diagrammatic representation of the difference between seedlings of (1) Monocotyledon, and (2) Dicotyledon. 1. Germinated seed of maize, S, with single cotyledon, C. 2. Seedling of bean, with two cotyledons (C C). The first true leaves, L, are seen above the cotyledons

phlet, giving an account or description of some single thing or connected series of things.

**Monolith** (Gr. *monos*, single; *lithos*, stone). Stone block, usually monumental and of large dimensions. It may be an unhewn menhir; the capstone or support of a megalithic monument; a hehn obelisk; a sarcophagus; a sculptured temple; or a colossal statue. Two statues of Rameses II at Thebes weighed 900 tons each. There are roof-beams 40 ft. long at Thebes; 170-ton lintels in Peru; a partly quarried block, 68 ft. long, of 1,100 tons at Baalbek. Huge monolithic sarcophagi in Egypt, and sculptured deities in India and Easter Island are extant. See Assyria; Carnac; Inca.

**Monomania** (Gr. *mania*, madness). Insanity with regard to one subject or group of subjects. See Mental Disorder.

**Monongahela.** River of the U.S.A. Rising in Marion co., W. Virginia, it flows N.E. to its junction with the Cheat and thence N. to unite with the Allegheny at Pittsburg in forming the Ohio. About 230 m. long, its main channel is navigable throughout.

**Monophysites** (Gr. *monos*, single; *physis*, nature). Followers of a heresy which gave rise to a schism in the Eastern Churches after the Council of Chalcedon in 451, and spread widely in Egypt and Asia Minor. It taught that the divine and human natures were so intimately united in the one Christ that He is partly divine and partly human, yet that the two natures became actually one. This heresy was developed by Dioscorus, patriarch of Alexandria, and its condemnation by the Orthodox Church was rejected by the Coptic Church, which has ever since held an isolated position.

It now exists only in name, the actual teaching of the Coptic Church and other Jacobite bodies being apparently orthodox. See Jacobite Church.

**Monoplane.** In aeronautics, name given to an aeroplane with only one main supporting surface. It is more efficient in lifting power for each square foot of surface than the biplane (*g.v.*), and is aerodynamically more suited for high speeds with all the strengthening members and bracing usually inside the structure. Although the wing area must necessarily be much greater to carry a given load than in machines with more than one wing, one of the most successful pioneer aircraft was the monoplane of Blériot, who crossed the English Channel in 1909, and following a period, lasting throughout the First Great War and for some time after, when the biplane was pre-eminent, monoplanes almost monopolised the field of aeroplane design. The success of the Supermarine-Napier monoplane in the Schneider trophy contest in 1927, and Lindbergh's transatlantic flight in a monoplane in the same year, established the supremacy of the monoplane. See Aeroplane; Biplane.

**Monoploid.** Cytological term. It is applicable primarily to a complete set of chromosomes in which there is not more than one of a kind, and hence to the nuclei containing such a set and so to organs and organisms having such nuclei.

**Monopoli.** Seaport of Italy, in the prov. of Bari. It stands on the Adriatic, 8 m. by rly. S.E. of Polignano, and 26 m. S.E. of Bari. It has a castle, built by Charles V in 1552, and a cathedral. Oil, wine, flour, fruit, etc., are exported, and woollen and cotton goods manufactured. Pop. est. 23,000.

**Monopoly** (Gr. *monos*, single; *pōlein*, to sell). The sole right or power to trade in a particular commodity or a specified area. In medieval times the Crown sold monopolistic trading rights to the burgesses of various cities. Later, particularly in Tudor and Stuart times, the grant by the Crown of monopolies in necessities to reward favourites caused much bitterness. Ultimately, by an Act of 1639, they were forbidden, and survived only in the grant of such royal charters as those of the East India company and the Bank of England (*g.v.*), and letters-patent granted to inventors.

Monopolies are commonly divided into (a) natural monopolies,



forms of trading in which competition would be unnatural; (b) legal monopolies, those which are legally established as a means of advancing the public good (for example, patents, copyright—to encourage invention and authorship—registered trade-marks and designs, professional registration such as that of medical practitioners, dental surgeons, solicitors, barristers, and patent-agents, national undertakings established by parliament, such as the B.B.C., the Electricity Commission, the National Coal Board, etc.); (c) artificial monopolies, i.e., those brought about by the amalgamation of competitive businesses and the emergence of a single bulk supplier instead, e.g. in the U.K. The term state monopoly is used to denote a trade or industry reserved to itself by a government either as an instrument of taxation or because it is believed that the commodity or service can be provided more cheaply in that way or is too important to leave in private hands (e.g., the manufacture of matches, tobacco, and cigarettes in many European countries, the operation of posts, telegraphs, and telephones in the U.K.). The variety of state monopolies and legal monopolies has greatly increased through nationalisation and the establishment of *ad hoc* industrial and trading bodies.

In economics, the so-called law of monopoly price states that a monopolist seeks to fix the selling price at the level which will maximise his net profit.

In the U.K. the Monopolies and Restrictive Practices Act, 1948, set up in 1949 a commission to investigate allegations of monopolistic practices referred to it by the board of trade. See Trust.

**Monorail.** System of transport in which a single rail is used to support the weight of a carriage or truck. A monorail system may have certain lighter guiding rails, which are, however, not absolutely essential to the system, the whole weight of the carriages being borne on one rail. It was early realized that a single rail offered the advantages of cheapness, concentration of weight, high speed, and possibly low cost of upkeep, but the system did not prove a commercial success generally. In 1882 a single rail on A-shaped supports was constructed in Algeria, and in 1886 a line between Listowel and Ballybunion was constructed in Ireland, the engine possessing duplex boilers, one on each side of the rail. A

similar rail has been successfully operated by electricity at the Ria mines in France. This A-shaped system of supporting the rail is known as the Lartigue system, after its inventor.

In the Langen system the carriages are suspended from an overhead rail, and such a line, built between Barmen and Elberfeld, proved successful. The system was worked by electricity.

In the most important development of the monorail system a gyroscope provides the balancing force. In 1907 Louis Brennan (*q.v.*) exhibited such a system before the Royal Society. A car was supported on a single track laid on the ground, and kept in equilibrium by a gyroscope, with flywheels moving at a speed of 7,500 revolutions per minute. A carriage containing 40 passengers was successfully operated in 1909, the gyroscopic wheels revolving in a vacuum at 3,000 revolutions per min. Richard Scherl, in Germany, also carried out, in 1910, a series of experiments with the gyroscopic system, but none of the systems went beyond the experimental stage. See Gyroscope; Railways.

**Monotectic.** Type of equilibrium found in the constitution diagrams of certain binary alloys. In effect the system consists of a normal eutectic, in which the amount of one phase present is very small. Certain alloys in the central portion of the diagram exhibit a unique phenomenon; as the molten alloy is cooled, at a certain temperature, not easily determined, the liquid divides into two liquid phases of different compositions. When a certain temperature is reached, the compositions change, until the eutectic can be deposited. There are thus present at one time three phases, two liquids and one solid, so that the system is invariant and the diagram has a horizontal line at that point. Monotectics are generally formed between two metals of very different melting points and the eutectic occurs very near the melting point of the lower melting metal. As an example the system copper-lead may be cited. See Alloy; Constitution Diagram; Eutectic; Metallography.

**Monotheism** (Gr. *monos*, single; *theos*, god). System of religious thought and practice which admits only one God. It is thus opposed to polytheism, which admits and worships many gods, and to henotheism, which wor-

ships only one God, but admits that others may exist. All theories of a dualistic origin of the universe, involving the essential evil of matter, are equally inconsistent with belief in one God. Whether monotheism is the oldest form of religion is uncertain. The very early worship of the sun and other natural objects may have originated in a vague belief in one supreme power, which was manifested in various ways, but the evidence tends in the other direction. The earliest cosmogonies known are dualistic, and indicate a struggle between the powers of good and evil. In all nations, except possibly the Hebrew, polytheism was at one time or another the prevailing religion; and even the O.T. Hebrews show a constant tendency to fall into it. See Deism; Theism.

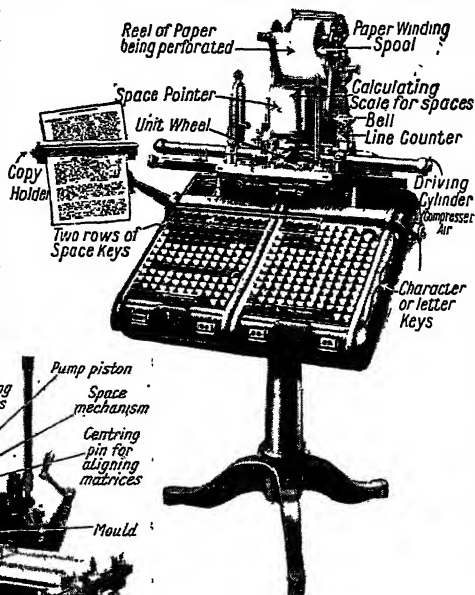
**Monotheletes** (Gr. *monos*, single; *thelētēs*, a person who wills). Followers of a heresy which arose in the Eastern Churches as the result of an attempt to harmonise orthodox and monophysite doctrines. It taught that, while in the Person of Christ there existed two natures, the divine and the human, yet those two natures did not possess separate divine and human wills, but only one will, partly divine and partly human. The heresy appears to have originated with Severus (d. 535), a deposed patriarch of Antioch. It was finally condemned by the Council of Constantinople in 680, and the decision was accepted by the Church of England at the Council of Hatfield which was held soon afterwards.

**Monotremata** (Gr. *monos*, single; *trema*, hole). Name given by zoologists to the Prototheria, the lowest surviving sub-class of mammals, found in Australasia. They include the duck-mole and the two spiny ant-eaters. These mammals have a single opening (cloaca) containing the anus and urino-genital aperture, whence the name, and are oviparous. See Mammal.

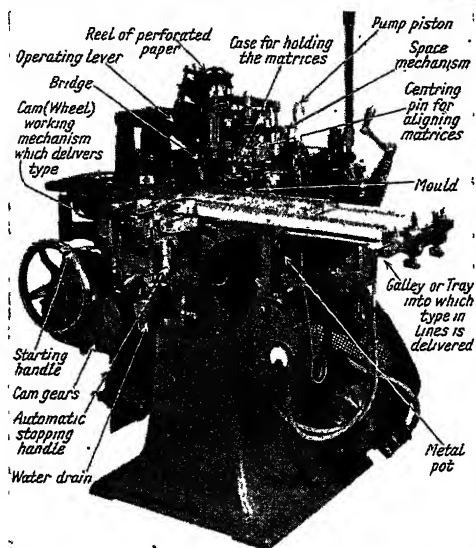
**Monotype.** Machine used by printers for setting up words from MS. into single letters of movable type—hence its name. It was invented about 1887 by Talbot Lanston, an American lawyer; in 1897 it was introduced into England, and The Times adopted it in 1909. Its product is akin to that of the hand compositor, each letter cast in a line being a distinct and separate unit, and not an integral part of a solid line like the product of the Linotype

and the Intertype. From both of these the Monotype differs, not only in mechanism, but in principle, inasmuch that alterations can be effected by hand without the recasting of an entire line, and the type itself can be readily accommodated to fit round illustrations if desired.

Two distinct operations are involved and two distinct machines are employed: (1) a keyboard, like a typewriter, for perforating a roll of paper somewhat on the principle of a pianola; and (2) a machine casting the single letters



the air released through the perforations, cause the case containing the dies or matrices (each corresponding to every key of the keyboard) to be moved into such a position that the matrix of any particular letter is held for the fraction of a second over a mould into which is injected molten metal, an alloy of lead, antimony, and tin. The single letter of type thus cast is automatically ejected from the mould, the succeeding matrices of the word being brought by the actions above described to the mould, one after another with lightning rapidity,



**Monotype.** The upper picture shows a keyboard machine for preparing a perforated paper reel, which is afterwards placed in position in the casting machine, lower picture; then, by means of compressed air passing through the perforations, the mechanism automatically casts the type, assembles it in words, and properly spaces it

tells the operator what space is required to justify his line, this calculation having been automatically accomplished by the scale, and the depression of the requisite key completes the line, i.e. the last perforation (actually a double one) after the bell rings will eventually mathematically adjust a line by distributing spaces equally between the words

until the whole line, evenly spaced, is completed and pushed into the galley or tray in which the lines are assembled. The spacing between the words is done by means of wedges, their positions automatically controlled by the justifying or spacing perforations in the paper spool.

Matrix-cases for almost any type face and size are available, all of which are interchangeable on the casting machine. The normal matrix-case contains 225 characters and space matrices, arranged in 15 rows of 15. One monotype keyboard operator and caster attendant can do the work of five or six hand compositors. The entire body text, i.e. excluding headings and outlines, of this Encyclopedia was set by the monotype process. See Compositor; Forme; Intertype; Linotype; Newspaper; Printing.

F. W. CULLOW

**Monreale.** City of Sicily, in the prov. of Palermo. It stands on the slopes of Monte Caputo, 5 m. by tram and rly. S.W. of Palermo. It grew up round a monastery whose church, founded in 1174 by William II, was made in 1182 the metropolitan cathedral of Sicily. There is trade in wheat, olive oil, and fruit. See illus. p. 5815.

**Monro, HAROLD** (1872-1932). British poet. Born at Brussels, he became well known as the founder of the Poetry Bookshop in Great Russell Street, Bloomsbury, after the First Great War. A member of the Georgian group, he founded

of type and spaces, and automatically assembling them into words and lines.

The initial stage is effected by the operator manipulating a keyboard, the finger keys embracing all the characters of the alphabet, together with all the possible widths of spaces necessary to finish off all the lines evenly in a column or page to the same width, i.e. to justify the lines. The depression of a key perforates a hole in a reel of paper, each hole, or sometimes two, representing a space or a letter. As the allotted width of line is nearing completion, a bell automatically warns the operator, and a small drum, covered with figures and termed the justifying scale, rotates to a position controlled by the mechanism. A glance at this drum

so that the line ends evenly.

The paper reel slowly revolves in the process of perforation and rewinds itself until the operator has finished his MS. The perforated reel is then detached and fitted into the casting mechanism, which begins to produce the type at the end of the copy and works back to the beginning. The reel is passed over a chamber or cylinder containing compressed air, along the face of which is a row of about 30 tiny portholes leading to an equal number of miniature pipes.

As the reel travels over the cylinder the perforations pass over the portholes one by one, allowing the compressed air momentarily to escape and pass down the pipes to actuate stops. These, by bobbing up and down under the pressure of

the Poetry Review, 1912; and Poetry and Drama, 1913. His volumes of verse included Strange Meetings, 1917; Real Property, 1922; and The Earth for Sale, 1928. His anthology, Twentieth Century Poetry, 1929, was popular and made known the work of many writers previously neglected, *e.g.* Anna Wickham. He died March 17, 1932, and his Collected Poems, edited by A. Monro, appeared the following year.

**Monroe.** City of Louisiana, U.S.A. On the Ouachita river, 73 m. W. of Vicksburg, it is served by the Vicksburg, Shreveport, and Pacific and other rlys. It is the head of steamboat navigation on the river. The chief industry is the production of industrial carbon. It has 6-ft. dykes as flood protection. Settled in 1785, and originally called Fort Miro, it was renamed after President James Monroe (*q.v.*) in 1819, was incorporated in 1820, and became a city in 1871. Pop. 28,309.

**Monroe.** City of Michigan, U.S.A., the co. seat of Monroe co. On the river Raisin, 34 m. S. by W. of Detroit, it is served by the Lake Shore and Michigan Southern and other rlys. Situated near Lake Erie, it is a summer resort. It has flour and paper mills, agricultural implement factories, and canneries, and trades in cereals and fruit. Settled in 1783, Monroe was incorporated in 1827, and became a city in 1836. A monument dedicated to "massacre victims" commemorates an incident of the war of 1812 when redskins attacked to the British forces slew U.S. soldiers. Pop. 18,478.



Monreale, Sicily. Façade of 12th century cathedral

**Monroe, JAMES** (1758-1831). American statesman. He was born in Virginia, April 28, 1758. He fought in the War of Independence, and in 1782, owing largely to the influence of his friend, Thomas Jefferson, he entered the

legislature of Virginia. In the congress of the confederation he specially interested himself in



James Monroe, American statesman

questions affecting the future of the west. He objected to the revised constitution of 1787, ranging himself with the Anti-Federalists, but later entered the senate in 1790, where he joined the party hostile to Washington.

In 1794 Monroe went to France as minister, but was recalled two years later. From 1799 to 1802 he was governor of Virginia, after which he went to France and Spain to endeavour to bring about the purchase of Louisiana and Florida, accomplishing only the former purpose. During 1803-07 he was minister to Britain. Then in 1811 Monroe became again governor of Virginia, and in 1812 secretary of state, being also secretary of war during the latter part of the war with Britain. In 1816 he was elected president against Rufus King, and he filled the office for two terms, or eight years. His rule is best known for his enunciation, in 1823, of the Monroe Doctrine (*v.i.*); it was a period of great material prosperity and little internal strife. He died at New York, July 4, 1831. *See* Life, D. C. Gilman, 1909.

**Monroe Doctrine.** Principle of international policy held by the U.S.A., the root idea of which is America for the Americans. The

doctrine was first formulated in a message to Congress by President Monroe in 1823, the two essential points being the following: (1) "The American Continents . . . are henceforth not to be considered as subjects for future colonisation by any European power." (2) "We should consider any attempt on

their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety." The doctrine was reaffirmed by Polk in 1845 and 1848, while the protests of the U.S.A. against the interfer-

ence of the French in Mexico in 1866, and against the claims of Great Britain in the Venezuela boundary dispute in 1895, were based upon it. The doctrine does not seek to prevent European powers from enforcing just claims under international law, and Great Britain on the whole has supported the doctrine, making as it does for the security of Canada and other British territory on the American continent. *See* International Law.

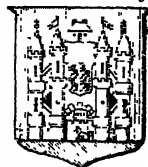
**Monrovia.** Capital of the republic of Liberia, W. Africa. It is on the sea-coast, and is a port of entry with a trade in palm nuts and dye woods. Pop. 10,000.

**Mons** (Flemish, *Bergen*). Town of Belgium, capital of the prov. of Hainault. It stands on the river

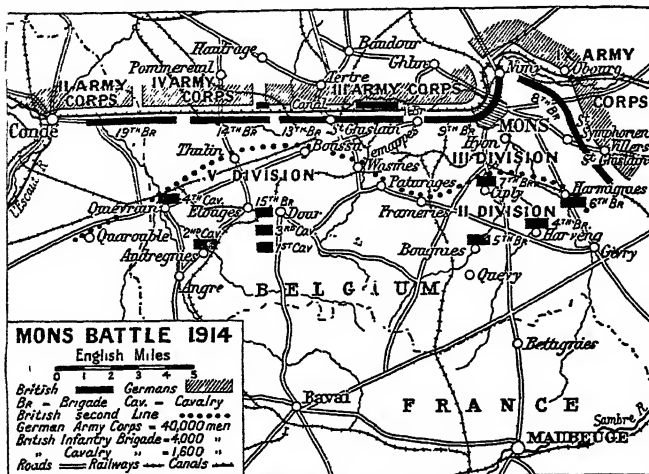


Mons, Belgium. The 15th century Town Hall

Trouille, 38 m. by rly. S.W. of Brussels, occupying a hill (whence its name) in the important coal-mining district known as the Borinage. A rly. centre of note, it is the terminus of the busy Mons-Condé Canal. Apart from its importance as an administrative centre, Mons is a centre of the local trade and has various industries, *e.g.* textiles, lace, oils, soap, and sugar, and is a military centre with large barracks. There is a school of mining. The Gothic church of S. Waudru, begun about the middle of the 15th century, has a fine interior with 16th century stained glass. The town hall, begun in 1458, is on the Grande Place, and has an ornate façade.



Mons arms



Mons. Map showing the general disposition of the opposing armies and the British first and second lines

Mons, believed to have been originally a Roman fortress, grew in the 8th century round a monastery founded by S. Waudru, or Waltrudis, a daughter of one of the counts of Hainault. It was in the possession of these counts, and of Spain, France, and Austria successively. It has stood many sieges, having been captured by Louis of Orange in 1572; by Louis XIV, 1691 and 1701; by Prince Eugène, 1709; by Saxe, 1746; and by Dumouriez, 1792. It was the capital of the French dept. of Jemappes from 1794 to 1814, after which it became part of the Netherlands. Its fortifications were finally demolished in 1862. Round the town was fought the famous battle of Aug., 1914, and it formed an important military centre for the Germans during their occupation of Belgium. It was recaptured by Canadian troops, Nov. 11, 1918. In the Second Great War it was occupied by the Germans after their breakthrough at Sedan in May, 1940. Mons was liberated on Sept. 4, 1944, by troops of the British 2nd army during their rapid advance into Belgium. Pop. 26,417.

**MONS, BATTLE OF.** Early encounter of the First Great War, memorable as the first large-scale engagement of the British Expeditionary Force with the German army. It occurred on Aug. 23, 1914, but was not fought to a finish as the British withdrew. The battle clearly demonstrated not only the German superiority in heavy artillery, but also the fine quality of the British troops.

By Aug. 22 the British, 65,000 strong, had reached a front run-

ning from E. of Mons to Condé. The French command planned that they should attack along with the French 5th army on their right and French territorial troops on their left, and if possible envelop the right of Kluck's 1st army. But that evening he learned that at least three German corps were marching against the British in a wide turning movement. The advanced position taken up by Sir J. French, British c.-in-c. (see map), was chosen for attack rather than defence, but in case a defensive battle had to be fought, he proposed to fall back on a line a little farther to the S. During the night there were German penetrations between the British right and French left, and the French 5th army were attacked with such violence and superiority of force that their position was untenable. The French troops who should have prolonged the British left had not arrived.

At daybreak of Aug. 23, German artillery began to shell the exposed loop on the canal N.E. of Mons. German infantry advanced at 8 a.m., and developed a turning movement against the British right. Soon after midday the British withdrew from the canal loop, blowing up the bridges over the canal. The Germans, attacking in force at other points along the canal between Mons and Condé, suffered heavily. So vigorous was the rapid fire of British rifles that the Germans reported they had been opposed by masses of machine-guns. But the British flanks were seriously threatened, and at 5 p.m. Joffre, French c.-in-c., informed Sir J. French that at least four

German corps (160,000 men) were attacking or turning his front and that the French 5th army was in retreat. The British were at once ordered to retire to the second position; but by nightfall the Germans were advancing in overwhelming strength. At dawn on Aug. 24 a general retreat was ordered. At Frameries the British rearguard put up a magnificent defence, obliging the Germans to carry out a costly formal attack.

The extrication of the two British corps from an enveloping attack by four German corps (with a fifth in reserve) was a remarkable feat, especially as the Germans were far better supplied with motor transport and aircraft. The long and painful British retreat which followed during the next fortnight became generally, though not officially, remembered as the "retreat from Mons." British losses in the battle were 4,000-5,000, German losses approximately double. Mons became a symbol of glorious defeat, and it was noted as appropriate that in 1918, Canadian troops reached and entered Mons on the morning of Nov. 11, only a few hours before the armistice.

**MONSERRAT OR MONTSERRAT.** Mountain and monastery of Spain, in the prov. of Barcelona. Near



Monserrat, Spain. West side of the mountain monastery

the right bank of the Llobregat, it is 21 m. N.W. of Barcelona. A remarkable serrated mountain mass (Lat. *mons serratus*), its highest point, Turó de San Jerónimo, reaches an alt. of 4,070 ft. The Montsagràt of the Catalans and the Montsalvat of the Middle Ages, on the sacred or sawn mountain a monastery was founded in the 8th century. Its chapel contained an alleged miracle-working image of the Virgin Mary, which attracted thousands of pilgrims annually, and the monastery became one of the richest and most celebrated in Spain. In the Napoleonic Wars

the French sacked the monastery (1811), and it suffered again severely in the Carlist rising of 1827. It is now in ruins. The more modern buildings date from 1560.

**Monsieur Beaucaire.** Romantic comedy. Based by Mrs. E. G. Sutherland and Booth Tarkington on the latter's novel of the same name, it was produced, Oct. 25, 1902, at the Comedy Theatre, London. Louis d'Orleans, son of the Regent, comes to Bath disguised as a barber, and wins the love of the reigning toast, Lady Mary Carlisle. Lewis Waller played Beaucaire, and Grace Lane Lady Mary. In a film version, 1924, the parts were taken by Rudolph Valentino and Bebe Daniels.

**Monsieur de Pourceaugnac.** Farical comedy-ballet in three acts by Molière and Lully, produced at Chambord, October 6, 1669, the author acting the title-rôle. Pourceaugnac is a middle-aged rustic, between whom and Julie, the daughter of Oronte, the last named has arranged a marriage. The humour turns on the devices adopted by Julie's lover Eraste to drive Pourceaugnac back to Limoges.

**Monsignore** (Ital., my lord). Title of honour bestowed by the pope on prelates and high officials of the papal household.

**Mons Meg.** Old cannon of great size consisting of bars of hammered iron bound together by iron hoops. It gets its name from the fact that



**Mons Meg.** Cannon made at Mons in 1486. It was supposed to have been used at the siege of Dumbarton, 1489. It is now at Edinburgh Castle

it was made at Mons-and it is to be seen in Edinburgh castle. Traditionally supposed to have been constructed in 1486, it was removed to the Tower of London in 1754, but was restored to Edinburgh in 1829.

**Monsoon** (Ital. *monsone*; Arab. *mausim*, season). Winds which blow regularly and persistently during definite seasons of the year. They are prevalent in middle latitudes, especially over S. and E. Asia. The primary cause of these winds is the seasonal difference of temperature between the land and the sea. They are closely connected with the great changes of pressure which take place between winter and summer over the Asiatic

land mass. In the latitude of the Arabian Sea and the Bay of Bengal the normal wind is the cold, dry N.E. trade, and the monsoon is experienced only during the cool season (i.e. October-March), when the pressure distribution is dominated by the intense anticyclone. A sudden indraught of air from the S.E. trade crosses the equator and, owing to the change in the earth's rotational deflection, reaches India as the S.W. monsoon. Because of its long passage over the sea the summer monsoon (June-October)



**Monstera deliciosa.** Foliage and stems of the American climber

is heavily laden with moisture, which results in long spells of heavy rainfall; the rains steadily advance north-eastwards and last until the reversal of the wind in October.

Most of India receives from 60 to 90 p.c. of the total annual rainfall during the season of the S.W. monsoon; the fall varies from year to year and the comparative failure of the periodical downpours means famine and plague; the important economic event for the Indian is the annual "bursting" of the heavy clouds which the wind rolls over India from the Arabian Sea.

Similar reversals of the main oceanic wind occur, less markedly, elsewhere, e.g. the Gulf of Guinea, E. Africa, N. Australia, the lower Mississippi region of the U.S.A., and eastern Brazil. Frequently the term "monsoon" is applied to denote such summer rainfall without reference to the associated winds. See Wind.

**Mons Star.** Popular name for the 1914 Star, awarded during the First Great War to 350,330 British troops for service in France and Belgium between Aug. 5 and Nov. 22-23, 1914.

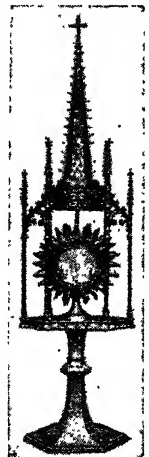
**Monster.** Word which has a number of senses. Commonly a monster is any huge animal, especially an extinct animal, e.g. prehistoric monsters as the dino-

saur, ichthyosaurs, mammoths, etc. It is also used in a somewhat similar sense in connexion with such fabulous creatures as mermaids, dragons, and the like. In general, anything abnormally big is called a monster, as a monster potato. The word is also used in the sense of monstrosity, i.e. anything ugly, abnormal, or deformed, and includes freaks like Siamese twins, two-headed men, etc. In 1934 considerable excitement was aroused by the so-called Loch Ness monster, which several people claimed to have seen. Observation and an examination of the banks of the loch failed to reveal the presence of anything unusual; and it was thought that seals, porpoises, black fish, or a semi-water-logged tree trunk, seen in a bad light or at a distance, had been mistaken for an aquatic monster.

**Monstera deliciosa.** Perennial climber of the family Araceae, a native of tropical America. The large, leathery, stalked leaves are heart-shaped, but, as they develop, the upper ones have part of their substance absorbed, so that their margins become lobed, and the more central areas have large perforations. The object of this extraordinary development appears to be to allow light to penetrate to the lower-growing parts of the plant. The large inflorescence is, like that of the calla, surrounded by a hood (spathe). The flowers are succeeded by a spike of berries, which are so crowded that they become six-sided at the surface, and within amalgamated into a fleshy, edible body like a banana, with the flavour of pineapple.

**Monstrance** (Lat. *monstrare*, to show). Sacred vessel of the R.C. Church, in which the Host is presented for adoration, carried in procession, and used in Benediction. It consists of a glass or crystal receptacle, called the *lunula* or *lunette*, in which the Host is placed. This is mounted in a gilded frame, frequently representing emanating rays, and is on a stem and foot.

**Montacute.** Country mansion of Somerset, England. Situated



**Monstrance.** Gothic pattern





Montacute. Elizabethan house near Yeovil, Somerset. It was completed at the end of the 16th century for Sir Edward Phelps, whose descendants lived there for over 300 years. It is now the property of the National Trust

about 5 m. W. of Yeovil, it is Elizabethan (1580-1611), but there is some doubt as to who was the architect. Some attribute the design to John of Padua; others to John Thorpe, builder of Longford Castle, near Salisbury. The imposing mansion remains as originally constructed, and is enriched by heraldic glass, fine ceilings, and panelling, with gardens among the finest in the country. Acquired in 1931 by the National Trust and the Society for the Protection of Ancient Buildings, it served as a repository for valuable objects removed from London during the Second Great War. It was reopened to the public in 1946 to house a collection of furniture.

**Montagna**, BARTOLOMEO (c. 1450-1523). Italian painter. Born at Orzinuovi, near Brescia, he probably studied under Alvise Vivarini and was influenced by Mantegna and Giovanni Bellini. His earliest known picture still extant is *The Virgin and Child*, 1487, at Bergamo. His *Madonna and Child*, in the National Gallery, was formerly ascribed to Bellini. Other important paintings are the *San Michele altar-piece*, 1499, *The Presentation in the Temple*, and *frescoes at Vicenza*. At Verona he painted the *frescoes in the chapel of S. Biagio*. He died at Vicenza, Oct. 11, 1523.

**Montagnana**. City of Italy, in the prov. of Padua. It stands on the river Frassina, 22 m. direct S.W. of Padua. Surrounded by old walls with medieval towers, it has a late Gothic cathedral with Renaissance choir, and the Palazzo Pisano, the work of Palladio. There is a fine collection of paintings in the cathedral, but others removed here from Florence suffered damage in the Second Great War.

**Montagnards**. Name given to members of the party, often called the Mountain (*q.v.*), formed during the French Revolution.

financial secretary to the Treasury, 1914-16; then succeeded Lloyd George as minister of Munitions. He left office with Asquith, but soon returned as secretary for India, 1917-22, being partly responsible for the Montagu-Chelmsford reforms. On a disagreement with Curzon, he resigned, and the same year lost his seat in parliament. He died Nov. 15, 1924.

**Montagu**, ELIZABETH (1720-1800). English writer. Daughter of Matthew Robinson, she was born at York, Oct. 2, 1720. In 1742 she married Edward Montagu, a wealthy son of the earl of Sandwich, and from about 1750 her salons, first in Hill Street, later at



Elizabeth Montagu, English writer

Montagu House, Portman Square, were centres of social and intellectual life in London. Among those who frequented them were Johnson, Burke, Garrick, and Reynolds. An occasional writer, she made a spirited reply to Voltaire in her *Essay on the Writings and Genius of Shakespeare*, 1769. Her May-day dinners to London chimney-sweeps were celebrated. She died at Montagu House, Aug. 25, 1800. See *Bluestocking*. Consult her *Letters*, new ed., E. J. Climençon, 1906.

**Montagu**, LADY MARY WORTLEY (1689-1762). English letter writer. A daughter of the duke of Kingston, she was born at Thoresby, Notts, and her father gave her a comprehensive education. In 1712 she married Edward Wortley Montagu (d. 1761), and on his appointment as ambassador at Constantinople in 1716 accompanied him there, already recognized as one of the most beautiful and the most accomplished women of her

time, and a great linguist. On the return of the Montagus to England they were persuaded by Pope to settle at Twickenham, but the friendship between Lady Mary and the poet gradually cooled and ultimately ended in a quarrel in which Pope behaved disgracefully. During 1739-61 ill-health compelled Lady Mary to live in Italy. She died in England, Aug. 21, 1762. Her gift for satirical verse was shown in her *Town Eclogues*, 1716, but it is as a letter writer that she excels. Her *Letters*, written during travels in Europe, Asia, and Africa, were first published in 1777; they reveal an unprejudiced mind with a wide if eccentric range of interests. She introduced to England the practice of inoculation against smallpox. Consult Lady M. W. M. and Her Times, G. Paston, 1907; *Life and Letters*, L. Melville, 1925.

**Montague**. Anglicised form of the name of one of the rival families of Verona (Montecchi), whose quarrels form the story on which Shakespeare based his *Romeo and Juliet* (*q.v.*). In the play it is represented by Montague, head of the house, Lady Montague, their son Romeo, and their nephew Benvolio.

**Montague**, CHARLES EDWARD (1867-1928). English writer. He was born Jan. 1, 1867, and went to the City of London school and Balliol College, Oxford. In 1890 he joined the Manchester Guardian and for 35 years helped C. P. Scott, whose daughter he married, to give literary distinction to that newspaper. A novel about journalism, *A Hind Let Loose*, 1910, was followed at once by a critical work on the theatre, *Dramatic Values*. Well over age, Montague served in France in the First Great War, joining the army as a private, and later becoming a press officer attached to H.Q. Intelligence. Disenchantment, 1922, revealing the rare beauty of his style, was also one of the first books to reveal something of the inner truth about the war. Two further novels—*Rough Justice*, 1926, and *Right Off the Map*, 1927—showed his fine mind still perturbed by the disillusionments of war and war-making. Other books were *Fiery Particles* (short stories), 1923, and *The Right Place* (essays), 1924. He died May 28, 1928.



Charles Edward Montague

**Montagu House.** A London building. The original Montagu House was built in 1731 for John, 2nd duke of Montagu, on a site in Whitehall gardens which was the extreme S. portion of the old palace of Westminster. In 1859 the old house was demolished and replaced by the present building in French Renaissance style, designed by William Burn, and completed in 1862. To prevent infiltration of river water, the building was constructed on a concrete raft made from the materials of the old house. This was the town residence of the dukes of Buccleuch from 1862 until 1917, when it was occupied by the ministry of Labour. In the Second Great War it was Combined Operations headquarters from May, 1942. In June, 1946, it was taken over by the ministry of Food. Another Montagu House, built for Ralph, 3rd baron, and later the 1st duke, in 1675, occupied the site of the British Museum (*q.v.*). *Consult* Private Palaces of London, E. B. Chancellor, 1908.

**Montagu Square.** London square. Between Upper George Street and Montagu Place, W., on the Portman estate, it was named after Elizabeth Montagu (*q.v.*). Built 1800-13, on ground once called Ward's Field, the site of Apple Village, its residents have included the mother of the 1st Baron Lytton, Anthony Trollope, and Sir Frederick Pollock.

**Montaigne, MICHEL D'EYQUEM, SEUR DE** (1533-92). French essayist. He was born Feb. 28, 1533, at the Château de Montaigne, near Bordeaux, in Périgord, a property bought by his great-grandfather, Raymond Eyquem. Montaigne thought the Eyquems intermarried with English residents in Guienne in the time of the Plantagenets. His great-grandfather and grandfather were merchants and exporters of wine, wood, and dried fish; hence the gibe of Joseph Scaliger that Montaigne was the son of a herring-monger. The essayist's father, Pierre d'Eyquem, followed Francis I to Italy and returned to Bordeaux when 33 to marry, take up the duties of alderman and mayor, carry on business as a wine-seller, rebuild the château, and help to found the college of Guienne. Pierre married Antoinette de Lopes, a lady of Jewish blood. Michel was their third son, and one of his brothers and two of his sisters were Protestants.

In accord with his father's views on education, Michel was put out to nurse with a peasant woman,

taught Latin by tutors who knew no French, and early encouraged to read Virgil, Ovid, Terence, and Plautus. He was sent to the college of Guienne, where George Buchanan was one of his teachers, and studied law, probably at Toulouse. He became a magistrate and attended the court of Francis II. His friendship, 1557-63, with Étienne de la Boétie, a young republican thinker, with whom he thought to seek a new home on the other side of the Atlantic, had a lasting effect on his character.



*Montaigne*

From a contemporary portrait

La Boétie left Montaigne his library, and appointed him his literary executor. Shortly after his marriage to Françoise de la Chassaigne, by whom he had five children, four of whom died in infancy, only a daughter surviving, Montaigne succeeded to the family estate, was made a knight of the order of S. Michael, and, giving up his magistracy, designed to live in retirement, for which purpose he built the famous tower containing his study. But he served as gentleman of the chamber to Henry III and Henry of Navarre, and had some experience of a military life.

A sufferer from stone, he sought recovery by a visit to the baths of Lucca, and in 1580-81 travelled to Italy by way of Switzerland and Germany, chiefly on horseback. In March, 1581, he was made a Roman citizen. Recalled from travel by his election as mayor of Bordeaux, he was re-elected and retained office until 1585. During a visit to Paris in 1588 he met Mlle. Marie le Jars de Gournay, a lady of noble family and some learning, who became his literary executrix.

During his later years he formed a friendship with Anthony Bacon, brother of Francis, and Pierre Charron. He died of quinsy, Sept. 13, 1592, receiving the last offices of the Church. His remains, buried near the château, and removed a few months later to the conventual church of S. Antoine, were, in March, 1886, reinterred in the new university buildings at Bordeaux.

Montaigne's first literary work was a translation, for his father, of the *Theologia Naturalis* of Raimond Sebond, 1568; it served as the text of one of his essays, the first two books of which appeared in 1580; a second edition came out in 1582, a third in 1587, and a fourth, with book 3, in 1588. Of two copies of the 1588 issue, annotated by Montaigne, one provided the material for that brought out by Marie de Gournay in 1595. Montaigne's *Journal de Voyage*, written in part by a secretary and in part by himself, was discovered in MS. at the Château de Montaigne in 1769-70 and, edited by M. de Querlon, was first printed in 1774. He had gone to Paris in 1570 to superintend the printing of the works of La Boétie.

Montaigne lived in an age distracted by religious strife and political upheaval. He, for the most part, maintained the position of onlooker; in religion a formal adherent of the Church, at heart religious without superstition, tolerant without impiety. In civil strife he sought also to avoid extremes. His standpoint was one of provisional doubt; his attitude to all knowledge was *Que sais-je?* (What know I?). To him the quest of truth was more engaging than its possession; the greatest virtue was sincerity. Cicero, Plutarch, Seneca, Diogenes Laertius, Horace, Plato, Virgil, and Lucretius are the authors most frequently quoted by him. The first of essayists in point of time, a prince of egoists who veils his personality and is apt to hide his serious thought in his self-portraiture, he was a founder of modern criticism, and has exerted much influence on his successors. As a writer he displays wit and a happy humour even when, as in his travel journal, writing in physical pain. In his private life he was a devoted son, and as husband and father was more devoted than his philosophy would seem at first sight to allow.

W. F. Aitken  
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**Montalembert**, CHARLES FORBES DE TRYON, COMTE DE (1810-70). French politician and man of letters. Born in London, son of an émigré of noble family, he returned to France on the Restoration of 1815, and became known as the founder, with Lamennais (*q.v.*), of the journal *L'Avenir*, 1830, and a champion of the cause of religious liberty. He eventually broke with his colleague and submitted to papal condemnation of his work. He sat in the Chamber, 1848-57 and died in Paris, March 13, 1870. His books are *Vie de S. Elisabeth de Hongrie*, 1836 (Eng. trans. 1904); *Des Intérêts Catholiques au XIXe Siècle*, 1852; *Les Moines d'Occident depuis S. Benoît jusqu'à S. Bernard*, Eng. trans. 1896.

**Montalembert**, MARC RENÉ, MARQUIS DE (1714-1800). French authority on fortifications. Born at Angoulême, July 16, 1714, he entered the army in 1732. French commissioner with the Swedish army in the Seven Years' War, he fortified Anklam and Stralsund.



Marquis de Montalembert, French writer

He was elected a member of the French academy of sciences, and in 1776-86 published *La Fortification Perpendiculaire*. On his theory was founded the system of polygonal defence, first adopted by Prussia. Montalembert died March 29, 1800.

**Montana**. State of the U.S.A. It is bordered E. by the Dakotas, S. by Wyoming, W. by Idaho, N. by Canada. Its W. portion is traversed by the Rocky Mts., whence the surface descends E. to a rolling plain, interspersed with valleys; alt. ranges from 2,000 ft. in the E. to 5,000 ft. Headwaters of the Missouri and Columbia rivers rise in Montana, and the Yellowstone, Milk, and other Missouri affluents help to drain the state. Irrigation has been highly developed, and great reservoirs constructed along the Missouri and Madison.

With its large-scale farming the "treasure state" grows quantities of fruit, while wheat, oats, flaxseed, barley, rye, corn, and potatoes are among the crops. Chief mineral products are gold, silver, copper, zinc, coal, and petroleum. Rich in timber, Montana cultivates white pine, larch, spruce, and cedar. Unsurpassed for mountain scenery is the Glacier National Park, and the state contains seven Indian reservations.

First settled in 1809, Montana was admitted to the Union in 1889; it is divided into 56 counties, and sends two senators and two representatives to congress. The chief cities are Butte, Great Falls, Billings, Missoula, Helena (the capital), and Anaconda. Centres of education include the state university at Missoula, state college at Bozeman, and school of mines at Butte. There are 5,096 m. of steam rlys. and 95 airports. The state lost 15 p.c. of its working pop. during 1937-43, when miners emigrated to aircraft factories on the Pacific coast; farmers were victims of topsoil erosion, concentration of small farms, and backwardness in rural electrification. Cheap electric power was projected in 1948 by the Missouri Valley Authority. Area, 147,138 sq. m. Pop. 559,456. *Consult* Montana, J. K. Howard, 1943.

**Montanism**. Christian heresy which arose in Phrygia in the 2nd century under the teaching of Montanus. He claimed to be specially inspired by the Holy Spirit, and, together with two women, to be endowed with power to make known special revelations to the Church. His main teachings were that mortal sin may be pardoned by God, but cannot be forgiven by the Church; that second marriages are unlawful for Christians; that all Christians should lead ascetic lives; that no Christian should avoid or flee from persecution. Montanus became more or less identified by his more ignorant followers with the Holy Spirit Himself, and his later followers baptized converts in the name of the Father, the Son, and Montanus. The heresy was condemned by the council of Constantinople in 381.

**Montargis**. Town of France, in the dept. of Loiret. It stands on the river Loire, here met by the Vernisson, 47 m. by rly. E. of Orléans. It is a rly. junction, and, as the meeting-place of the three canals of the Loire, Orléans, and Briare, is an important trade centre. Pop. 14,615.

**Montauban**. Town of France, capital of Tarn-et-Garonne dept. It stands on the right bank of the Tarn, at its confluence with the Tescou, about 30 m. N. by W. of Toulouse, and is a rly. junction on the Paris-Toulouse line. Its foundation dates from 1144, when it was granted a charter by a count of Toulouse. Seat of a bishop, it was repeatedly raided by the Albigensians in the 13th century, and belonged to the English during 1360-1414. It has a long Protestant tradition, but after a Huguenot rebellion its fortifications were demolished by Richelieu. Notable buildings are the hôtel-de-ville with its library and museum; the cathedral (containing the Vow of Louis XIII, painted by Ingres, a native); and the church of S. Jacques. There is a 14th century bridge. Industries include cloth weaving, flour milling, and the making of furniture. Pop. 36,281.

**Montbéliard**. Town of France, in the dept. of Doubs. It lies 11 m. by rly. S.S.W. of Belfort, at the meeting of the Allaine and the Lissine, and on the Rhône-Rhine canal. Clock- and watch-making and cotton-spinning are carried on. The town was the capital of a county which, as Mömpelgard, formed part of Württemberg, 1397-1793. Pop. 14,301.

**Mont Blanc** (Fr., white mountain). Loftiest peak of the Alps, on the Franco-Italian frontier, in Haute-Savoie and Piedmont. The summit, which is in France, reaches an alt. of 15,781 ft. The main mass runs N.E. between the Little and Great St. Bernard Mts., and the principal peaks are the Dôme du Goûter (14,210 ft.), Aiguille du Midi (12,608 ft.), Grandes Jorasses (13,797 ft.), Aiguille Verte (13,540 ft.), Aiguille du Dru (12,320 ft.), and that of Argentière (12,820 ft.). It is mainly composed of granitic rock, and glaciers stretch down it. The snowline limit is about 8,500 ft. above sea level.

Mont Blanc was first ascended on Aug. 8, 1786, by Dr. Paccard and his guide, Balmat. It is now easily accessible from Chamonix (*q.v.*), and ascents are made nearly every day during a normal summer season. The principal passes are the Col de la Brenva (14,216 ft.), Col du Géant (11,060 ft.), and Col d'Argentière (11,537 ft.). Work on an 8 m. long road tunnel under Mont Blanc was begun in 1946. *See* Aiguille Verte; Alps; Crevasse; Glacier; Mer de Glace; Mountaineering.

**Montcalm de St. Véran, Louis Joseph, Marquis de** (1712-59). French soldier. Born near Nîmes,



*Montcalm*

Feb. 29, 1712, he joined the army young, and after seeing much service in Italy and Germany was appointed in 1756 to command the French forces in Canada. In 1757 he took Fort William Henry from the British, and in 1758 successfully defended Fort Ticonderoga against a superior British army. Then the tide turned. The French lost Louisburg and Fort Duquesne, and Montcalm was forced to retire to Quebec and prepared to defend it against the British under Wolfe. The latter succeeded in leading an army of 5,000 men up to the Plains of Abraham, where on Sept. 13, 1759, the French joined battle and were defeated. Wolfe was killed during the engagement and Montcalm was mortally wounded.

**Montceau-les-Mines.** Town of France, in the dept. of Saône-et-Loire. It lies in the busy industrial valley of the Bourbonnais, 14½ m. by rly. S. of Le Creusot, on a branch line from the Montchanin junction, and is on the Canal du Centre. It has extensive coal mines and some granite quarries. Pop. 26,726.

**Mont Cenis Tunnel.** Railway tunnel in the Alps between Savoy, France, and Piedmont, Italy. Eight m. long, the tunnel is not under the Mt. Cenis pass itself, but lies below Col de Fréjus, 17 m. to the W. Begun in 1857 on the Italian side, and in 1863 on the French, it was finished in 1870 at a cost of £3,000,000.

**Mont Cervin.** The French name for the Alpine peak commonly known as the Matterhorn (*q.v.*).

**Montclair.** Town of New Jersey, U.S.A., in Essex co. It stands on the Morris Canal, 5 m. N.N.W. of Newark, is served by the Erie and the Lackawanna rlys., and is a residential district of New York and a summer resort. It manufactures paper and hosiery. At one time part of Newark and later of Bloomfield, Montclair was incorporated in 1868. Pop. 39,807.

**Mont de Piété.** French national pawnbroking establishment. Founded in Paris, 1777, by royal ordinance, the original mont de piété started with a monopoly, and made large profits until its privileges were abolished at the

Revolution. Reopened in 1797 as a private concern, it had its monopoly renewed by Napoleon I. The mont de piété differs from the English pawnshop in that it is a state undertaking which retains traces of its Italian origin, part of the profits going to the support of the poor. In Italy monti di pietà were established to lend money to the poor in the middle of the 15th century, and thence spread over most of the continent of Europe. See Pawnbroker.

#### **Montdidier.**

Town of France. In the dept. of Somme, it stands on a hill near the river Don, 23 m. N.W. of Compiègne. Its buildings were almost destroyed during the First Great War. It was an important rly. junction, and its industries included tanning, printing, distilling, and making candles. The town existed in the time of the Frankish kings, and in the Middle Ages had its own counts. A fortified place, it was captured by the English in 1523. In 1814 it was occupied by the Cossacks, and in 1870 by the Prussians. It fell to the Germans on March 27, 1918, and was regained by the French on Aug. 10. Within the German zone of occupation from June, 1940, in the Second Great War, it was liberated during the British 2nd army's spectacular advance at the end of Aug., 1944. See Somme, Battles of the.

**Mont-Dore-les-Bains.** Town of France, in the dept. of Puy-de-Dôme. At an alt. of over 3,400 ft. among the Monts Dore, on the river Dordogne, 48 m. by rly. S.W. of Clermont-Ferrand, it is on a branch line from Laqueuille. It is famed for twelve mineral springs, which in summer attract sufferers from pulmonary affections, rheumatism, etc. There are numerous hotels, a small casino, and a funicular rly. ascending the neighbouring Salon de Capucin, 4,035 ft.

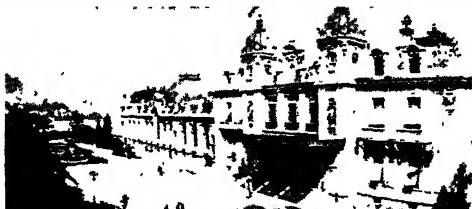
**Mont d'Or Tunnel.** Railway tunnel on the Paris-Milan route. It shortens the journey between Frasnay and Pontarlier by piercing Mont d'Or in the Jura range. It is 4 m. in length and contains a double track. Begun in 1910, the tunnel was opened in 1915.

**Montebello.** Town of Italy. In the prov. of Vicenza, it is 10 m. by rly. from its capital of the same name. In the vicinity the

Austrians were twice defeated by the French in 1796.

**Montebello.** Village of Italy, in the prov. of Pavia. It is 5 m. E. of Voghera. It is famed for two battles, June 9, 1800, and May 20, 1859, in which the Austrians were defeated by the French and the Franco-Sardinians respectively.

**Monte Carlo.** Town of the principality of Monaco. It lies on the N. shore of the Bay of Monaco,



Monte Carlo, Monaco. The Casino, containing the famous gaming rooms

adjoining the town of Monaco itself, and 150 m. by rly. E.N.E. of Marseilles. One of the most frequented resorts of the Riviera, it has an excellent climate, and is noted for the gaming rooms in its large casino, which, built in 1878, and adorned with beautiful statuary and paintings, contains also theatre, reading-room, etc. Roulette and trente-et-quarante are the chief games played. Besides numerous hotels, the town has a large palais des beaux-arts. A rly. runs to La Turbie, a mt. village 2 m. to the N.W. Pop. 10,681. See Casino; Monaco.

**Monte Cassino.** Monastery near Cassino, Italy. Situated on a hill 1,703 ft. high, about 45 m. N.W. of Naples, it was founded by S. Benedict in 529 on the site of a temple of Apollo, and was the first monastery of the order of Benedictines. Devastated by the Lombards in 589, it was rebuilt in 720, and again in 954 after destruction by the Saracens. Further rebuilding took place in the period 1637-1727. The imposing buildings, with their arcaded courts and cloister and the great abbey, were totally destroyed during the Second Great War (*see* Cassino). Its golden days were in the 11th century under Abbot Desiderius, later Pope Victor III. From 1886 a national monument, it was the centre of Western monastic organizations and an important educational establishment. The church was rich in marbles, mosaics, sculptures, paintings, and frescoes, and had beautifully carved choir stalls; in the library were more than 10,000 volumes, many rare MSS., including the 12th century work by Alberic which is

said to have inspired Dante's *Divina Commedia*, a collection of papal bulls, and other treasures, most of which perished in the disaster of 1944. Plans for the rebuilding of the monastery were soon put in hand after the war, and a committee was set up in April, 1947, to collect funds and to co-ordinate the work of the various national committees already formed in Europe and America to assist in its restoration. See Cassino, also illus. Consult *Storia della Badia di Monte Cassino*, L. Tosti, 1842-43; *The Monastery*, F. Majdalany, 1945.

**Montecatini.** Health resort and spa of Italy, in the prov. of Lucca. It is 19 m. by rly. E. of Lucca. The warm mineral springs, in the Nievole Valley, have been in use since the 14th century, and are beneficial in abdominal complaints, scrofula, etc. Pop. 3,400. There is a village of this name in the prov. of Pisa, 24 m. E.S.E. of Leghorn. It is noted for its warm saline springs. Near by are copper mines, worked since the 15th century.

**Monte Cristo.** Small island of the Tuscan Archipelago, N.W. Italy. It lies 26 m. S. of Elba, has an area of 6 sq. m. and an alt. of 2,120 ft. It contains many springs and the ruins of a monastery, destroyed by Corsairs in the 16th century. It is the ancient Oglasa.

**Monte Cristo, THE COUNT OF.** Romance by Alexandre Dumas the elder (assisted by A. Maquet), 1845. The hero is a Marseilles sailor, Edmond Dantès, who poses in various rôles during a succession of wonderful adventures of suffering and revenge. The story is perhaps the best of the many works of the great master of French romance.

**Monte Croce.** Pass in the Dolomite Alps, in Italy. It is a fine carriage road leading from Primiero in Tirol to Feltre in Belluno. Its alt. is 1,830 ft. It was the scene of fighting in the First Great War between the Austrians and Italians in 1915. See Dolomites.

**Montecuculi** or **MONTUCUCCI**, RAIMONDO, COUNT OF (1609-80). Austrian soldier. He was born Feb. 21, 1609, at Montecuculi, Italy, of an old noble family. About 1625 he entered the Austrian army and served almost continuously throughout the Thirty Years' War. He was present at the battles between the Imperialists and the Swedes, including Lützen, where he was wounded, and save for a period during which he was a prisoner, he was in the field until the year of 1648, being then a general. In 1657-60 he had a command

against the Swedes, but his reputation rests upon his campaigns against the Turks and the French, especially on his great victory over the former at St. Gotthard in 1664. Between 1672 and 1675 he was commanding the Austrians against the French and he retired in the latter year. Made a prince and duke of Melfi, he died Oct. 16, 1680.

**Monte della Disgrazia** (Ital., mount of misfortune). Mountain mass of Italy, in the prov. of Sondrio. It has an alt. of 12,065 ft., and lies N.W. of Sondrio and W. of the Val Malenco. See Alps.

**Montefiascone** (Ital., large bottle mountain). City of Italy, in the prov. of Rome. It stands on a hill at an alt. of 2,010 ft. at the S.E. side of Lake Bolsena, with a rly. station 9 m. N. of Viterbo. The unfinished cathedral dates from 1519, and the church of S. Flaviano from 1032. The city is noted for its muscatel wine. Pop. est. 9,600.

**Montefiore, SIR MOSES HAIM** (1784-1885). Jewish philanthropist. The eldest son of a merchant, Joseph Elias Montefiore, he was born at Leghorn, Oct. 24, 1784, but his early life was passed in London, where his family had settled. He became a stockbroker and soon made a fortune and retired from business. In 1837 he was sheriff of London, being made a knight, and in 1846 he became a baronet. A centenarian, and a strict Jew to the end, he died July 28, 1885. Montefiore's fame rests upon the work he did for the Jews throughout the world. He visited Palestine in their interests, also Turkey, Russia, and other countries, and his labours and charity relieved many of them from persecution and distress.



Sir Moses Montefiore,  
Jewish  
philanthropist

**Montefrio.** Town of Spain, in the prov. of Granada. It stands on the Bilano river 25 m. N.W. of Granada. It was a frontier fortress of the Moors, whose castle still stands. Alcohol, cotton, and soap are manufactured. Pop. 11,765.

**Monte Grappa.** Italian mountain. It is the highest point in the range between the Brenta and the Piave. During the First Great War it was the scene of heavy fighting following the battle of Caporetto (q.v.). See Piave, Battles of the.

**Monteleone** (anc. *Hipponium*). Town of Italy, in the prov. of Catanzaro. It stands on a hill, alt.

1,575 ft., overlooking the Gulf of Santa Eufemia, 70 m. by rly. N.E. of Reggio. It has a castle built by Frederick II. Monteleone was built on the site of the Roman Vibo Valentia, which succeeded the older Greek town. Traces of both still remain. Monteleone was shattered by an earthquake in Sept., 1905. Pop. 10,100. There is another Monteleone in Italy, in the prov. of Avellino. Pop. est. 13,000.

**Montélimar.** Town of France, in the dept. of Drôme. It stands on a hill on the left bank of the Rhône, 93 m. by rly. S. of Lyons, and has industries in silk and flour-milling, and local trade in agricultural produce and wine. There are remains of a 12th century keep. Capital of Valdaine in the Middle Ages, it was united with the Dauphiné to the French crown.

Montélimar was captured from the Germans by U.S. 7th army troops advancing up the Rhône valley Aug. 29, 1944. Pop. 15,972.

**Montem.** Name given to a custom formerly observed at Eton College. Every third year on Whit-Tuesday all the boys, led by the captain of the school, marched to an eminence called Salt Hill, whence the phrase *ad montem* (Lat. to the hill), and collected money—hence called salt—from the spectators of the ceremony. The sum collected sometimes exceeded £1,000, and was given to the captain of the school as a contribution towards the cost of his maintenance at the university. How the custom originated is not known. It was in existence as early as 1561 and was observed until 1844. See Eton.

**Montemayor, JORGE** (c. 1520-1561). Spanish novelist and poet. Of Portuguese descent, he was born at Montemor o Velho, near Coimbra, whence he derived his name, the Spanish form of which is Montemayor. He is known as the author of *Diana*, the first Spanish pastoral novel, which achieved 17 editions in the 16th century, and provided material for an episode in *The Two Gentlemen of Verona*. It was translated into French and English and was much parodied and imitated. Montemayor died Feb. 26, 1561.

**Montenegro** (Serb. *Crna Gora*, black mountain). Former kingdom of Central Europe, now a part of Yugoslavia. Forming part of the Karst limestone heights, it is a barren and mountainous region lying N.W. of Albania and bounded on the S.W. by the Adriatic, dropping steeply down to the sea and to the plains of



Serbia. As a province of Yugoslavia, its area is 3,733 sq. m. and its pop. 360,044. Maize, tobacco, and wine are produced, and cattle are reared on the uplands. The administrative capital is Cetinje, though Jakova is a larger town.

After the Serbian disaster at Kossovo in 1389, the Montenegrins established themselves in their mountain fastnesses under a Serbian dynasty. Danilo Petrovitch proclaimed himself *vladika* or prince bishop in 1897, and strengthened his position by an alliance with Russia. Montenegro maintained her independence despite perpetual conflict with Turkey, during which Cetinje was three times sacked. The treaty of Berlin, signed in 1878, formally recognized the country as a sovereign principality, at the same time granting it a coastline of 28 m. and a section of the plain surrounding Scutari. A constitution was adopted in 1903, and the first national assembly, met the next year. In 1910, on the jubilee of his accession, Nicholas I assumed the title of king.

Montenegro joined the Balkan League and fought beside Serbia in the Balkan wars, receiving in consequence accessions of territory which included nearly half of the Sanjak of Novi Pazar. When Austria declared war on Serbia, July 28, 1914, Montenegro at once threw in her lot with the Serbians, and a force of 40,000 invaded Bosnia in the initial stages of the war. With the Serbian armies finally driven out of Serbia, Austria undertook the conquest of Montenegro. The Montenegrins offered small resistance: a Bulgarian force took Jakova, Dec. 3, 1915, and the Austrians entered Cetinje, Jan. 13, 1916. Negotiations took place, Montenegro's object being to gain time for her forces to fall back to Podgoritz and Scutari, and thence into Albania; meanwhile the king and the royal family, with the government, escaped into Italy. By the end of Jan., 1916, the conquest was complete.

At the end of Oct., 1913, in view of the general situation, the Austrians withdrew from Montenegro without offering serious resistance. After the armistice, King Nicholas being an absentee in France and the country occupied by Serbian troops, a national assembly was elected and met at Podgoritz, Nov. 24, 1918. Within two days the king was deposed, and the country voted to join in the new kingdom of Yugoslavia. See Yugoslavia.

**Montenotte.** Village of Italy, in the prov. of Genoa. It stands among the Ligurian Alps, 8 m. N.W. of Savona. It gives its name to the battle fought April 12, 1796, when Napoleon gained his first victory over the Austrians. The battle was not decisive, and the whole of the French army was not engaged; but the Austrians, seeing their line of retreat threatened, fell back on Dego, which was stormed two days later. See Napoleonic Campaigns.

**Montepulciano.** City of Italy, in the prov. of Siena. It stands on a hill, alt. 2,000 ft., 23 m. (44 m. by rly.) S.E. of Siena. A walled and picturesque city, it has a Renaissance cathedral (slightly damaged by shell-fire in the Second Great War), several fine churches, the Palazzo Comunale, and many other palaces. It is noted for its wine. Pop. 16,000.

**Montereau.** Town of France, in the dept. of Seine-et-Marne. It lies at the meeting of the Yonne with the Seine, 13 m. by rly. E. of Fontainebleau, and is a rly. junction on the main Paris-Sens line. It has industries in porcelain, pottery, brickmaking, tanning, zinc-white, and cement. The church dates from the 13th-15th centuries. Montereau was the site of an 8th century monastery of S. Martin (Monasterium), and in the 14th century belonged to the king of Navarre. Here John the Fearless, duke of Burgundy, was assassinated in 1419. Near by was fought the battle of Montereau, Feb. 18, 1814, when Napoleon defeated the Württembergers and Austrians.

**Monterey.** City and seaside resort of California, U.S.A. It stands on Monterey Bay, 125 m. S. of San Francisco, and is served by the Southern Pacific rly. The industries include canning and fishing, and from a good harbour large quantities of oil are shipped. Owing to its beautiful situation and mild climate, it is visited by pleasure-seekers. In appearance it is still largely Mexican, though Chinese, Italians, and Portuguese in distinctive dress are seen.

The town owes its origin to a mission founded by the Franciscans in 1770, although the site had been visited and the place named by a Spanish sailor nearly two centuries before. It was then in the Mexican prov. of California, being for some years the capital. On July 7, 1846, it was taken by the U.S.A., and in 1849 the convention that drew up the constitution of California met here. In 1853 it was made a city. As "the old Pacific

capital," Monterey is described by Stevenson in *Across the Plains*, and John Steinbeck has brought it into his novels. Pop. 10,084.

**Monterey** or **MONTERREY.** The fourth city of Mexico. The capital of the state of Nuevo Leon, 1,625 ft. above sea level, it is 165 m. W. of Matamoros, and is served by rlys., also connected by highway with Mexico City. Situated in a range of the Sierra Madre, amid orchards and gardens, it is the seat of a bishopric. There are foundries, steel works, breweries, saw and flour mills, large smelters, and ice factories. Agriculture and silver mining occupy many. Formerly called León, Monterey was founded in 1560, and in 1599 became a city under its present name. In 1909 it was much damaged by flood, and more than 1,000 people lost their lives. Pop. 125,099.

**Monterey Bay.** Indentation of the coast of California, U.S.A. About 24 m. broad at the entrance, it forms a deep and commodious anchorage, and has two lighthouses. On the N. shore is Santa Cruz, and on the S. shore are Monterey and Pacific Grove.

**Monterey Cypress** (*Opuntia macrocarpa*). Large evergreen tree of the family Pinaceae, a native of



Monterey Cypress. Leaves and fruit of the Californian evergreen

California. It attains a height of over 50 ft., growing rapidly, and has close set branches and minute overlapping, scale-like, dark green leaves.

**Monte Rosa.** Mountain mass of the Pennine Alps (*q.v.*) on the Italo-Swiss border. It lies between the canton of Valais and Piedmont, 50 m. E. of Mont Blanc. Alt. 15,217 ft. Dufourspitze, the highest summit, is in Switzerland, and was first ascended in 1855 by G. and C. Smyth, Hudson, and their companions. On the N.W. is the Gorner glacier, and on the S. is the large Monte Rosa glacier. An observatory was established here in 1904 at 15,000 ft. See Alps.

**Monte San Giuliano** (anc. *Eryx*). City of Sicily, in the prov. of Trapani. It stands on the top of a steep hill, alt. 2,465 ft., overlooking the seaport of Trapani, 25 m. N.N.E. of Marsala. It has a cathedral dating from the 15th century and restored in 1865. The city occupies the site of the long-famous Eryx (*q.v.*), of which some of the prehistoric and Phoenician walls remain under the Roman fortifications.

**Monte Sant' Angelo**. Town of Italy, in the prov. of Foggia. It stands on the S. slope of Monte Gargano (*q.v.*), alt. 2,766 ft., 10 m. by road N.E. of Manfredonia. It has a picturesque 15th century castle, and the church of S. Michele, built in 491 over a grotto, a famous pilgrim resort. Pop. 23,000.

**Montesarchio**. Town of Italy. It is 13 m. N.N.W. of Avellino. On a neighbouring hill was the old Samnite Caudium (*q.v.*).

**Montespan**, FRANÇOISE ATHE-NAÏS DE ROCHECHOUART, MARQUISE DE (1641-1707). French courtier,

mistress of Louis XIV. Born at Ton- nay - Char- ente, she was the daughter of the duke of Mortemart, and went to court as a maid-in-wait- ing to the queen in 1660.

In 1663 she married Louis, marquis of Montespan, by whom she had two children. A woman of great beauty, she earned notoriety by her indulgence in black magic, and in 1667 became the king's mistress, the children of the union being made legitimate by the king in 1673, and a separation from her husband pronounced in 1674. After 1675, the liaison weakened, though the marquise, displaced now by Mme. de Maintenon, remained at court until 1691, when she left Versailles for a religious life. She died at Bourbon- l'Archambault, May 27, 1707. Her Memoirs appeared in 1829, Eng. trans. in 1895.

**Montesquieu**, CHARLES LOUIS DE SECONDAT, BARON DE (1689-1755). A French writer. Born in Gascony, Jan. 18, 1689, he was trained for the law, and succeeded his uncle, whose wealth and title of Montesquieu he inherited, as holder of a high legal office in the parlement of Bordeaux in 1716. There he remained until 1726, when he resigned and went

to live in Paris, being admitted to the Academy. A visit to England in 1729-30, part of a prolonged tour in Europe, made a deep impression upon him, and he settled down to literary work at his château of La Brède, near Bordeaux, ordering his estates and life on the model of an English landowner. He died Feb. 10, 1755.

Montesquieu early began to write, and continued to do so. Of his writings three stand out as serious contributions to human thought. *Lettres Persanes*, which appeared anonymously in 1721, pretend to be the outspoken comments of two Persians on their visit to Europe, and are a wonderful satire on the manners and customs of the age. *Considérations sur les Causes de la Grandeur et de la Décadence des Romains*, first published in Amsterdam in 1734, show the workings of a powerful and original mind, strengthened by wide reading and by the absence of fettering and conventional theories. The same qualities are revealed in his third and much longer great book, *De l'Esprit des Lois*, first published at Geneva in 1748. An edition of Montesquieu's writings appeared in 7 vols. in Paris, 1875-79, ed. by E. Laboulaye. See *Esprit des Lois*; *Government*; consult Montesquieu, Sir C. P. Ilbert, 1904.

**Montessori, MARIA** (b. 1870). Italian educationist, born near Ancona, Aug. 30, 1870. The first



Maria Montessori,  
Italian educationist

woman M.D. of Rome uni- versity, she took her medi- cal degree in 1894, and be- came assistant doctor at a psychiatric clinic for men- tally deficient children. Ex- perience there led her to evolve the Montessori method (*v.i.*) of child education, and she later founded clinics in Barcelona, Laren, Hol- land, and London. She lectured on her system at English universities, was appointed inspector of schools by the Italian government in 1922, organized a training course in Madras, 1939, and in 1947 directed the Montessori centre in London. Among her publications are *Peda-*



Baron de Montesquieu,  
French writer

gogical Anthropology, 1913; *The Advanced Montessori Method*, 2 vols., 1917-28; *The Child in the Church*, 1929; *The Secret of Childhood*, 1936.

**Montessori Method**. System of teaching young children evolved by Dr. Maria Montessori, who achieved remarkable success with mentally deficient children while directing the Scuola Ortofrenica in Rome at the beginning of the 20th century. Like Froebel, she believed that true education lies in self-development, and that the teacher's primary work is to assist it by providing an environment which will encourage physical and mental growth, stimulate activity, and promote self-reliance. The teacher is to direct and not repress the child's activities, through simple physical exercises, open-air work such as gardening and the care of animals, plastic work to develop a sense of touch and form, and training of the senses. Furni- ture is devised to give the utmost freedom of movement and to help the child to be independent in regard to personal habits. Prizes and punishments are discarded.

In 1907 the method was applied with much success to ordinary children, and schools organized on the Montessori system were estab- lished in Rome and Milan and abroad. The system attracted attention in the U.K. and in America, where the foundress lectured extensively. There is a Montessori training college at Cranleigh, Surrey.

**Monteverde, CLAUDIO** (1567-1643). Italian composer. Born at Cremona, he became a boy vio- linist in the

service of the duke of Man- tua. His tal- ents attracted notice, and in 1602 he was made master of the chapel there. Music master at S. Mark's, Venice

in 1613, he remained there until his death, Nov. 29, 1643. His operas, especially *Orfeo*, 1607, mark important advances, not only in the setting of operatic words, but in the freedom of harmony and the treatment of orchestral instruments. The har- monic style which he invented Monteverde outlined in a book and defended in controversies with rival musicians. He also composed madrigals. Consult *Life and Works*, H. Prunières, Eng. trans. 1926.



Claudio Monteverde,  
Italian composer

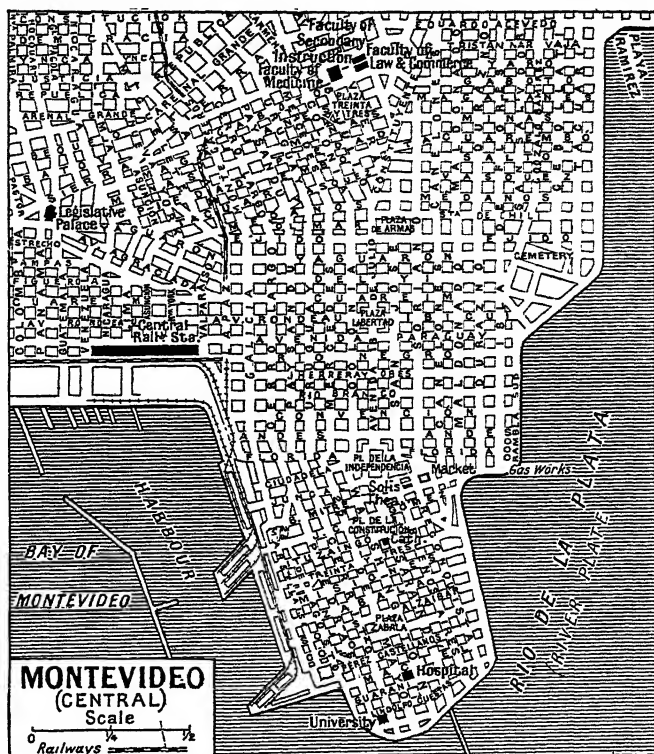
**Montevideo.** Maritime department of Uruguay, at the mouth of the Rio de la Plata. Its surface is hilly, with much pasture land for the grazing of cattle. Exports include beef and other animal products, and wine. Its area is 256 sq. m. Pop. 541,042.

**Montevideo.** City of Uruguay, capital of the republic and of the dept. of Montevideo. It originally



occupied a small peninsula between the Rio de la Plata and a bay, of which it formed the S. extremity. The city has spread some miles inland in an E. direction, and now lines the bay on its three sides. The Cerro, a low, conical hill, alt. 500 ft., at the head of the bay, is crowned by an old fort, still in use, and a light-house.

Montevideo is the principal seaport of the country and the terminus of several rly. lines. Built on a regular plan of *cuadradas*, or squares, the streets extend N., S., E., and W. from the old central point, the Plaza de la Independencia, and the closely built section of the town, standing on a long tongue of land thrust into the bay, continually enjoys sea breezes. This is one of the best built cities in the western hemisphere. The seat of an archbishopric with two suffragan bishops, it has a cathedral, numerous interesting churches, a university, schools, many theatres, and hospitals. The Plaza de la Constitución is the very heart of the city's life, and here are the cathedral, the old



Montevideo, Uruguay. Plan of the central districts of the capital

legislative buildings, clubs, hotels, and business and newspaper offices. Near the city are two racecourses and a bull-ring. A stadium seats 70,000 spectators. An immense harbour is somewhat exposed and obstructed by reefs, rendering it insecure from the heavy storms which frequently

occur. The seaside suburbs of Pocitos and Ramirez are popular resorts for citizens of Buenos Aires.

The climate is healthy, although a high summer temperature prevails. Beef, hides, and other animal products are exported. The city was founded 1726 as an outpost against the Portuguese, and cap-



Montevideo, Uruguay. Entrance to the Rio de la Plata (River Plate) seen from the fort on the Cerro

tured by the British in 1807, but was relinquished when General Whitelocke met with disaster at Buenos Aires. It became free in 1814, and was made capital of the republic in 1828. In Montevideo harbour the German battleship Graf Spee took refuge after the battle of the River Plate, Dec. 13, 1939, and was scuttled just outside the three-mile limit four days later. There is a British colony of about 1,000 in a pop. of 730,000. *See* Plate, Battle of the River; Uruguay.

**Monte Viso.** Peak in Piedmont, Italy. It is the highest point of the Cottian Alps. It stands near the sources of the Po, on the French frontier, and has an alt. of 12,615 ft. The starting point for the ascent is Crissolo.

**Montez, LOLA** (1818-61). Stage name of the Irish dancer, Marie Dolores Eliza Rosanna Gilbert.



Lola Montez,  
Irish dancer

Born at Limerick, she lost her father, an army officer, when a child in India. After a clandestine marriage in 1837, which ended in a divorce five years later, she appeared in London as Lola Montez, Spanish dancer. Touring Europe in 1847, she fascinated Ludwig I of Bavaria, who created her countess of Landsfeld, and she began to take part in politics. Returning to England after the revolution of 1848, she married a Guards officer, George Heald, but his relatives taking proceedings against her for bigamy, she induced him to take her to Spain and thence in 1851 to America, where she was again successful on the stage. On Heald's death the same year, she married and left her third husband, and devoted herself to works of charity. She died Jan. 17, 1861, in New York.

**Montezuma I** (c. 1390-1471). Aztec ruler of Mexico. He began to reign in 1437. He extended his dominions to the Pacific and the Gulf of Mexico, crushed the Tlascalans, annexed Chalco, and enlarged Tenochtitlan, his capital, on the site of which Mexico City is built. *See* Mexico.

**Montezuma II** (1466-1520). Last Aztec ruler of Mexico. Distinguished as warrior and legislator, he extended his conquests to Honduras and Nicaragua, but his arrogance and despotism led to the Spaniards, under Cortés (1519),

receiving a more cordial welcome than they otherwise might have had. He was killed while a prisoner in Spanish hands.

**Montferrat.** Former duchy of Italy. It was situated between the republic of Genoa, the river Po, and the Maritime Alps. Ruled by its own margraves, it existed from the dissolution of the empire of Charlemagne about 900 until 1305. The duchy consisted of upper and lower Montferrat, Casale being the capital. The reigning family, who laid claim to the throne of Piedmont, ended with John I, whose nephew, son of the Empress Irene of Constantinople, succeeded to the estates, and was the first of the Montferrat-Palaeologus house. On the extinction of this family in 1533, the duchy passed through the Gonzagas of Mantua to Savoy, and in 1703 became part of Piedmont.

**Montfort, LOUIS-MARIE DE** (1673-1716). French saint. Born at Montfort-la-Cane, Brittany, he entered the Jesuit college at Rennes, and was ordained priest in 1700. He embarked on his career as missionary in the W. provinces of France, preaching in the dioceses of St. Malo, Nantes, Poitiers, and La Rochelle, setting up calvaries, and restoring chapels during journeys on foot. He founded two religious congregations: the Company of Mary, for priests (Montfort Fathers), and the Daughters of Wisdom, for nuns. Canonised July 20, 1947.

**Montfort, SIMON DE** (c. 1208-65). English statesman. A younger son of Simon de Montfort,



Simon de Montfort,  
as represented in a  
window of Chartres  
Cathedral

count of Toulouse and earl of Leicester, who led the crusade against the Albigenses, he inherited the English earldom in 1232, and six years later married a younger sister of Henry III. Although long suspected as a foreigner, he took a leading position among the barons who were opposed to the king. Simon's unswerving love of justice, as he conceived it, his strong religious feeling, and his masterfulness gave him the title of Earl Simon the Righteous. He had at heart no less what he conceived to be the rights of the people than the privileges of the barons; he desired the pre-

dominance of law, but, like Cromwell, he could see no security except in what would have been virtually his own dictatorship. Governor of Gascony from 1248, he was accused of maladministration—with some justice—and retired to France.

In 1258 the contest with the crown came to a head, and in 1259 Montfort and the barons forced Henry to accept the provisions of Oxford, which placed the government of the country in the hands of baronial committees, in each of which Montfort was predominant. In 1261 Henry renounced the provisions. The dispute was referred to the arbitration of Louis IX of France, who gave his award, the Mise of Amiens (*q.v.*), against the barons, Jan. 23, 1264. Montfort took up arms, routed and captured the king at Lewes, May 14, and for a year was in effect dictator. In Jan., 1265, he summoned two representatives (borough members) from certain towns to a council sometimes regarded as the first parliament. Those barons who were jealous of Montfort's power then made common cause with the king. On Aug. 4 Montfort was defeated by the future Edward I, and killed at Evesham. *See* Evesham, Battle of; Lewes, Battle of. *Consult* Lives, G. W. Prothero, 1877; M. Creighton, 1895; C. Bémont, Eng. trans., 1930; B. C. Boulter, 1939.

**Mont Genève.** Pass of the Cottian and Graian Alps. Between Italy and France, it connects the valleys of the Dora Riparia and the Durance, on the road from Turin to Briançon. Reaching an alt. of 6,100 ft., it is one of the easiest of the Alpine passes. *See* Cottian Alps.

**Montgolfier, JOSEPH MICHEL** (1740-1810). A French inventor. He was born at Vidalon-lez-Annonay, and early became interested in aeronautics. With his brother, Jacques Étienne (1745-99), he studied the possibilities of making balloons. Their crude experiments, 1782-83, led to the later invention of the hydrogen balloon. They were honoured by Louis XVI, and Joseph was appointed to various offices by Napoleon. They wrote on aeronautics, including *Les Voyageurs Aériens*, 1784. Joseph died June 26, 1810 *See* Aeronautics; Balloon.



Montgolfier Brothers,  
French inventors  
From a plaque

**Montgomerie**, ALEXANDER (c. 1545-1611). Scottish poet. Son of Hugh Montgomerie of Hesselhead Castle, Ayrshire, he became attached to the Scottish court under the regent Morton, and travelled on the Continent. His poems are now only literary curiosities, with the exception of *The Cherrie* and *The Slae*, a combination of love poem and moral allegory, written in the 14-line stanza, and abounding in fine passages. They were edited by Cranston for the Scottish Text Society in 1886-87; additions by G. Stevenson, 1910.

**Montgomery**. Mun. bor. and co. town of Montgomeryshire, Wales. It stands near the Severn, 7 m. S. of Welshpool and has a rly. station  $1\frac{1}{2}$  m. distant. The name is that of a Norman family, one of whom built a castle here c. 1100. Around this the place grew, becoming a chartered town in 1227. There are ruins of the castle which was destroyed during the Civil War. Market day, Thurs. Pop. 841.



Montgomery arms



Montgomery, Wales. Ruins of the ancient castle

**Montgomery**. City of Alabama, U.S.A.; state capital, and the co. seat of Montgomery co. It stands on the Alabama river, at the head of navigation for large vessels, 178 m. by rly. N.E. of Mobile, and is served by rlys. A commercial and rly. centre, it has steamship communication with Europe, Panama, and New York. Its streets present a curious mixture of old houses, modern bungalows, hotels, rly. shops, and lumber mills intermingled. Montgomery thrives on the export of cotton, perhaps 500,000 bales in a year. Its manufactures include fertilisers, syrups, cigars, machinery, wagons, and cotton goods.

Settled in 1814, renamed New Philadelphia in 1817, it was incorporated in 1837, and superseded

Tuscaloosa as state capital ten years later. From Feb. to May, 1861, it was the seat of the Confederate govt., and it was taken by federal troops on April 12, 1865. Pop. 78,084, a large percentage being negroes.

**Montgomery**. District and town of Pakistan, in Multan division of W. Punjab. The district lies between the Sutlej and Ravi rivers, in the Bari Doab. The middle of the area is high and dry, and cultivation depends largely upon the irrigation canals, rainfall

being but 14 ins. a year. Wheat and pulses are the chief crops. The arid, higher ground is devoted to the herds of the pastoral Jats. The town is close to the Ravi, on the rly. from Multan to Lahore, and the Lower Bari Doab canal brings irrigation water. It dates from 1864, when the village of Sahiwal was made the dist. headquarters and renamed after Robert Montgomery, right-hand man of John Lawrence and lieutenant-governor of the Punjab, 1859-65. Area 4,204 sq. m. Pop., dist., 1,329,103.

## F.-M. LORD MONTGOMERY OF ALAMEIN

Sir Charles Gwynn, Commandant, Staff College, Camberley, 1926-30

*This account of the personal career of the British commander who achieved greatest fame during the Second Great War is supplemented by accounts of his campaigns under Alamein; Eighth Army; Europe, Liberation of Western; North Africa Campaign. See also Alexander, F.-M. Viscount, and Second Great War*

Born in Kennington vicarage, London, on Nov. 17, 1887, Bernard Law Montgomery came of a family long established in Ulster, that recruiting ground for field-m Marshals. His boyhood from two to 14 was spent in Tasmania during the period when his father was bishop of that island. Returning to England, he himself decided on the army as a career, and his education was completed at S. Paul's school and Sandhurst. Nevertheless, son of a bishop and grandson of Dean Farrar, he was brought up in a clerical atmosphere which clearly exercised a strong influence on his character: his abstemiousness, indifference to personal comfort, and powers of self-abnegation were outstanding characteristics of the man.

At school and at Sandhurst, although a notable player of games, he was not a success; but when in 1908 he was gazetted to the Royal Warwickshire regt. he showed exceptional keenness in his profession. With his battalion he went to France in 1914. Desperately wounded at Meteren in the autumn of that year, he was evacuated to England but, making an amazing recovery, was able to return to France. There, employed on the staff, he ended the war as chief staff officer of a div., a temporary lt.-col. with the D.S.O. and six mentions in dispatches to his credit. Demobilisation entailed reversion to permanent rank; but after being an instructor at Camberley staff college, he was given command of his battalion in 1931, serving with it in Egypt and Palestine. In Egypt, although at times in collision with authority, he was recognized

as a remarkable trainer of troops. In Palestine, then a responsibility of the Air ministry, he was senior officer of the army contingent and became impressed with the necessity of closer relations between the two services. On completion of his regimental command he became a senior instructor at Quetta staff college and later commanded a brigade in England. Selected 1938 to command an *ad hoc* div. for the suppression of the Arab rising in Palestine, he was invalided home



Montgomery

after a short time. On his recovery he was given command of the 3rd div. on Salisbury Plain. That div. he took to France when war broke out. With it he played a prominent part in the retreat and Dunkirk evacuation. In England he became, 1940, a corps commander in charge of an important section of the S. coast and was actively concerned in the reorganization and training of the army.



Such was Montgomery's background when in Aug., 1942, he was unexpectedly ordered to Egypt to take command of the 8th army there. In spite of his somewhat difficult characteristics the War office had recognized his merits; but he had not as yet attracted public attention. That he had given special thought as to how in modern warfare a high commander could assert personal influence on his troops was his own secret.

On his arrival in Egypt he had no time to lose in applying his own theories to the problem before him. A new attempt by Rommel to reach Alexandria was imminent, and the 8th army, still disorganized and depressed by disastrous experiences, was in a poor state to meet his attack. Montgomery was fortunate in having in Alexander,

Rommel, compelled to withdraw to his original position, in his turn prepared to meet attack. Supported by Alexander, in spite of pressure from above, Montgomery refused to strike prematurely; but when he had completed his reorganization and had gathered strength for a sustained effort, his promised offensive came and the battle of Alamein, beginning Oct. 23, was fought. In it Rommel's reputation for invincibility was shattered and world-wide fame came to the unknown general and to an army that had previously been dogged by misfortune.

The unconventional methods Montgomery used to impress his personality on his troops and his somewhat flamboyant utterances excited in some quarters derision and hostility; but his army and the general public were convinced that a commander of exceptional quality had arrived. Montgomery's long and sustained pursuit of Rommel through Libya and Tripoli is described under North Africa Campaign; it showed a new standard of co-operation between ground and air forces, and gave proof of organizing and team-building capacity in its commander in addition to tactical skill. Clearly he had an

admirable staff, but he was using it to the best advantage. Out-maneuvred at El Agheila and at the approaches to Tripoli, Rommel was forced to continue his retreat to the Tunisian border and beyond. In the battle of Tunis Montgomery, called away to plan the landing in Sicily, took no prominent part; but the 8th army shared in the fighting and its reputation induced Rommel's successor, von Arnim, to make fatally wrong dispositions.

For the strategy of the Sicilian and Italian campaigns Montgomery had no responsibility, but he carried through difficult tactical operations with marked success. (See Italy: Campaign in, 1943-45.) At the end of Dec., 1943, Montgomery was summoned to England to take part in the preparations for the intended Allied landing in France. Again his task was to be the executive conduct of a strategical plan prepared by others, although his advice helped materially to change the tactical plan originally envisaged. Placed initially in sole command of the Allied force to be landed, in addition to supervising preparations he devoted his energies to inspiring the troops with confidence, and workers in war industries with a realization of the importance of their labours; his innumerable personal visits to troops and to factories undoubtedly had immense effect in raising morale.

In due course the landing was successfully accomplished with honours equally shared by the three services. (For an account of the campaign, see Europe, Liberation of Western.) Operations followed broadly an agreed plan, but for a time progress seemed to be so slow that even Eisenhower thought a new plan might be necessary. Montgomery's confidence and determination, however, never faltered and, never losing the initiative, he forced his old opponent Rommel to expend his reserves piecemeal. As a result the break-out when it came had swifter and more decisive results even than had been anticipated. As had been arranged, General Eisenhower then took over direct control of the whole Allied force, leaving Montgomery, promoted field-marshal, Sept. 1, 1944, in command of the 21st army group, composed of the British 2nd and Canadian 1st armies, to carry out the tasks assigned to him.

Montgomery had strongly advocated a different policy from that General Eisenhower adopted. Both Eisenhower and Montgomery agreed that a crossing of the Rhine and capture of the Ruhr would make prolongation of German resistance impossible; but there were two alternatives: (a) to concentrate all available transport for the maintenance of a powerful, mainly armoured, thrust north-eastwards which, overcoming any resistance offered by the disorganized enemy, might secure a bridgehead over the Rhine as a gateway to the plains of N. Germany; (b) to pursue the enemy on a broad front with a view to lining up on the whole length of the Rhine before invading the heart of Germany. Course (a) was the more risky, and it would have entailed depriving a large part of the U.S. armies of mobility and offensive power; but it promised swifter results. Course (b) entailed disper-



Field-Marshal Lord (then General Sir Bernard) Montgomery addressing Canadian troops before the invasion of Italy, in 1943  
*British Official*

his chief, a man who not only himself inspired confidence, but was willing to accept responsibility and to give his subordinate a free hand, placing reinforcements of men and material that were arriving freely at his disposal.

Montgomery's immediate grasp of the situation and restoration of the confidence of the 8th army must rank as one of his greatest achievements. Warning his troops that there would be no further retreat and that they must fight where they stood, he promised them victory, first in a defensive battle and then in due course by a resumption of the offensive. The troops responded amazingly to the omnipresence, energy, and confidence of their new leader. In less than a month after his arrival the skillfully planned defensive battle of Alam el Halfa was won and

sion of effort, and although by engaging the enemy everywhere it gave him less opportunity of staging a counter-attack, it offered less chance of inflicting rapid and decisive defeat on him. General Eisenhower chose course (b), chiefly because he considered port facilities, especially at Antwerp, essential before the final invasion of Germany could be attempted. Under his plan 21st army group opened the Channel ports and Antwerp, and attempted to secure a bridgehead over the Maas and lower Rhine. With its immensely long line of communication, however, it proved not strong enough to carry through these tasks simultaneously. Whether plan (a) advocated by Montgomery would have succeeded must remain a matter for speculation. But despite their differences of opinion, Eisenhower's confidence in Montgomery was evident, for he placed the 1st and 9th U.S. armies under his command to help stem Rundstedt's counter-offensive in the Ardennes, Dec., 1944-Feb., 1945, the 9th remaining part of the 21st army group until the Ruhr was encircled at the beginning of April. That army group was the first to line up on the Rhine; the meticulously planned and admirably executed crossing of the Rhine followed, March 23-24. Fittingly enough, the commander of 21st army group received the first offer of unconditional surrender by the enemy, and was the first in Germany to accept the surrender of the whole enemy force opposed to him.

#### Unbroken Sequence of Victories

With this astonishing record, Montgomery gained a reputation as a commander in the field second to none. Although often opposed by the best of the enemy's commanders and troops, from the time he set foot in Egypt he had a virtually unbroken series of victories to his credit, gained under widely different conditions. It is true that, except in Libya and Tripoli, he was never in independent command, and was therefore responsible only for executive action and not for major strategic planning. That he showed himself a master of major tactics, versatile and determined both in attack and defence; and that he was a leader endowed with exceptional power of getting the best out of his troops are indisputable. The immediate influence he exercised in restoring the confidence of the 8th army and inspiring it to develop *esprit de*

*corps* to an unprecedented degree was all the more remarkable because the methods he adopted to bring his personal magnetism and qualities into play broke many British conventions and excited much criticism. To an exceptional extent he took his troops into his confidence before battle, and to that no doubt was due the response they gave to the heavy demands he made on them.

It was sometimes said that he showed himself unsuitable for team work. He was certainly an outspoken subordinate; but he was a remarkable team builder.

Montgomery was fortunate in as much as his opportunity came at a time when Allied power had begun to develop, and the enemy, having outrun his strength, had become vulnerable. He was fortunate, too, in having in Alexander and Eisenhower superiors ready to support him and to make allowances for his eccentricities and unconventionality; but there can be few cases in which a comparatively unknown general so completely rose to the occasion, and furthermore maintained a suddenly acquired reputation.

After the final surrender in Germany, Montgomery was c.-in-c. British army of the Rhine, military governor of the British zone of Germany, and British member of the Allied control commission in Berlin, May, 1945-Feb., 1946, when he was appointed C.I.G.S. and returned to Great Britain. In the new year honours, 1946, he received a viscounty, taking the title Viscount Montgomery of Alamein, of Hindhead. As C.I.G.S. he initiated reforms in the army aimed at making it both more attractive and more adaptable and efficient; and sought increasing integration of imperial defence. In 1948 he was appointed permanent military chairman of the committee of commanders-in-chief set up by the five Western Union nations.

*Consult* his Normandy to the Baltic, 1946; El Alamein to the R. Sangro, 1948; Montgomery, A. Moorehead, 1946.

**Montgomery, GABRIEL, COMTE DE** (c. 1530-74). French soldier. Grandson of a Scottish officer in the French service, he went to Scotland in 1545, with forces sent to Mary of Lorraine by Francis I. On June 30, 1559, in a tournament, he accidentally inflicted a mortal wound on Henry II of France. Taking refuge in England, he became a Protestant, and returned to join the Huguenot armies in 1562. He defended Bourges

and Rouen against royal forces, unsuccessfully attacked Mont St. Michel, 1563, and in 1569 invaded Béarn, capturing Orthez. He escaped from the massacre of S. Bartholomew, 1572, taking refuge in Jersey and again in England. In 1573 his attempt to enter La Rochelle failed, and he was captured at Domfront. Taken to Paris he was executed, May 25, 1574.

**Montgomery, JAMES** (1771-1854). Scottish poet. Born at Irvine, Nov. 4, 1771, the son of a



*After T. H. Illidge*

Moravian missionary, he was apprenticed to a baker, and in 1792 became a clerk in the office of the Sheffield Register. In 1795 he started the Sheffield Iris, which he edited until 1825, twice getting into trouble for publishing seditious matter. He was a man of exemplary character, reflected in the strong religious tone of his poems, of which *The World Before the Flood*, 1813, and *Greenland*, 1819, are best known. His hymns include *For ever with the Lord*, and *Hail to the Lord's Anointed*. He died at Sheffield, April 30, 1854. His *Poetical Works* were repr. 1881.

**Montgomery, JOHN** (1860-1911). American aeronaut. Born at San Diego, Calif., he studied the flight of seagulls, and in 1883 built a glider with twin wings with which he carried out soaring experiments. In 1890 Mahoney, a well-known balloon parachutist, was taken in one of Montgomery's gliders by a balloon to a height of 4,000 ft., when the glider was released and brought to earth after a controlled flight lasting 23 mins. Montgomery was killed when he crashed in one of his gliders. As he had never attempted to achieve powered flight, his work was overshadowed by that of the Wrights (*q.v.*). A film based on his life, *Gallant Journey*, was produced in 1946.

**Montgomery, ROBERT** (1807-55). British minor poet. Born at Bath, the natural son of a professional clown named Gomery, he became notorious by reason of Macaulay's devastating criticism in the *Edinburgh Review*, April, 1830, of two poems by him, *The Omnipresence of the Deity*, and *Satan*. Later he became a successful preacher in Glasgow and London, and died Dec. 3, 1855.

**Montgomeryshire.** An inland county of N. Wales. Its area is 797 sq. m. It is almost entirely surrounded by mountains, and is itself a hilly region. The Plynlimon range is in the S.W., and elsewhere on the borders are the



**Montgomeryshire.** Berwyn, Breidden, and Kerry Council Hills. The chief

rivers are the Severn, which rises here, and its tributaries, the Tanat and Vyrnwy, also the Wye. Herein is the artificial lake Vyrnwy. Oats are grown, sheep and ponies are reared, and slate is quarried.

The chief town is Montgomery, but Welshpool, Llanidloes, and Llanfyllin are larger. Newtown and Machynlleth are urban districts. Railways and the Montgomeryshire canal, 24 m. long, serve the county. There are some British and many Roman remains in the county, which, before it was made into a shire, was part of the district of Powys. It sends one member to parliament. Pop. 48,473. *Consult* Montgomeryshire, J. May and S. F. Wells, 1942.

**Month.** Period of time chiefly regulated by the moon's motion round the earth. There are various months according to the different methods of computation. (1) The lunar month, lunation, or synodic month, is the time which elapses between consecutive new or full moons, and its length on the average is 29 days, 12 hours, 44 mins., 2·8 secs. (2) The tropical month is the revolution of the moon with respect to the movable equinox. It is 27 days, 7 hours, 43 mins., 4·62 secs. (3) The anomalistic month is the time in which the moon returns to the same point of her movable elliptic orbit. It is 27 days, 13 hours, 18 mins., 37·4 secs. (4) The sidereal month is the interval between two successive conjunctions of the moon with the same fixed star. It is 27 days, 7 hours, 43 mins., 11·47 secs. (5) The nodical month is the time in which the moon accomplishes a revolution with regard to her movable nodes. It is 27 days, 5 hours, 5 mins., 35·8 secs. (6) The calendar month is the month recognized in the almanacs, consisting of an arbitrary number of days. (7) The solar month, the twelfth part of a solar year, consists of 30 days, 10 hours, 29 mins., 4 secs.

In statutes before Jan. 1, 1851, and deeds, wills, and contracts before Jan. 1, 1926, "month" in

the absence of any contrary indication usually means lunar month; but in statutes and documents after these dates it means calendar month unless the context otherwise requires. In mercantile transactions in the City of London and in all mortgages, "month" even before 1926 meant calendar month.

**Monti, VINCENZO (1754-1828).** An Italian poet. He was born at Fusignano, near Ravenna, Feb. 19,



Vincenzo Monti,  
Italian poet

1754. His lyrical tragedy, *Aristodemo*, 1786, rendering the grief of a father for having slain his daughter, was followed by a romantic tragedy, *Galeotto Manfredi*, 1788.

In 1793 he produced a Dantesque epic, *Basseviliana*, the subject being the murder in Rome of Hugo Basseville, representative of the French republic. This was translated into English by H. Boyd, 1805, and by Lodge, 1845. Monti became Napoleon's historiographer in Italy and his panegyrist, notably in *Mascheroniana*. He translated the *Iliad* into Italian. Died at Milan, Oct. 13, 1828.

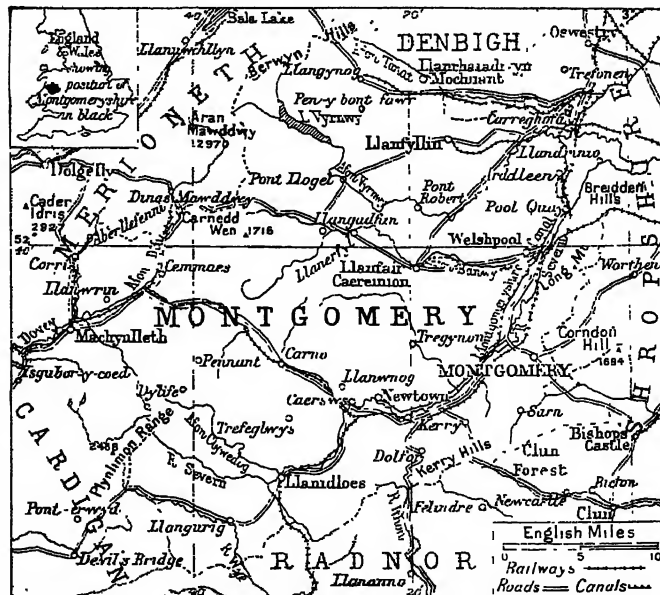
**Montian.** In geology, a division of the Upper Cretaceous system of rocks. See Cretaceous System.

**Monticello.** Home of Thomas Jefferson, 3rd president of the U.S.A., in Albemarle co., Va.,

which he designed. The house and its 640 acres are on a hillside 2 m. from Charlottesville, overlooking the Blue Ridge mts. and the Piedmont plateau. Jefferson began to build Monticello in 1770, and it was his home for 56 years. The style, predominantly Graeco-Roman and Palladian, greatly influenced Virginian domestic architecture. Unusual lighting and ventilating devices, folding doors, and disappearing beds are a feature of the house. Monticello was purchased in 1923 by the Jefferson memorial foundation for 600,000 dollars (then £120,000), and was dedicated as a national shrine on July 4, 1926, the centenary of Jefferson's death there.

**Montignies-sur-Sambre.** A town of Belgium, in the prov. of Hainaut. It lies 3 m. E. of Charleroi, on the left bank of the Sambre, in the midst of the thickly populated industrial area of the valley. The town has important coal mines in the vicinity, and various metal-working, engineering, and glass-making industries.

**Montilla.** Town of Spain, in the prov. of Córdoba. It stands on a spur of the Sierra de Montilla, alt. 1,165 ft., 31 m. by rly. S.S.E. of Córdoba. The dist. is noted for its exquisite wines. The birthplace of Gonzalo or Gonsalvo de Córdoba, it contains the ruined castle of his father, Fernandez. Montilla manufactures coarse linen, leather goods, olive oil, and pottery. Pop. 16,780.



Montgomeryshire. Map of the inland and pastoral county of North Wales

**Montluc** OR **MONTLUC**, BLAISE DE LASSARAN-MASSENCOME, SEIGNEUR DE (1502-77). French soldier. Born in Gascony, he became after his father the seigneur of an estate there. Beginning in the ranks, he saw much service in the French army in Italy. He made a name by his defence of Siena in 1555, and the king was glad of his services when civil war broke out in France. In 1574 he was made a marshal, and he continued in the field until his death. Montluc is known as the author of Commentaries which deal with his campaigns between 1521 and 1574. They afford valuable material for the history of that time. Henry IV named the book the Soldier's Bible. There is an ed. in 5 vols., 1864-72.

**Montluçon**. Town of France, in the dept. of Allier. It stands on the Cher, 50 m. S.W. of Moulins, and consists of an upper or old town and a newer one below. In the former are the churches of Notre Dame and S. Pierre, the latter a Romanesque building begun in the 12th century, and the castle. In the newer town are factories for making glass, chemicals, iron and steel goods, sewing machines, etc. In the neighbourhood are coal mines. Pop. 47,074.

**Montmartre**. Arrondissement of Paris, containing the *quartiers* of Grandes-Carrières, Clignancourt,

Commune broke out, Feb., 1871. The district is thickly populated, has many steep and narrow streets, and is noted chiefly for cabarets and night clubs which have grown up since about 1880. The large cemetery of Montmartre dates from 1798, and contains the graves of many distinguished men, including Murger and Gautier. The name is thought to be a corruption of Mont Martyr, given because in Roman times, so it is said, S. Denis and other martyrs were put to death here. There was a temple to Mercury on the hill. See Paris.

**Montmédy**. Town of France, in the dept. of Meuse. It lies on the river Chiers, 31 m. by rly. S.E. of Sedan, and from its junction a rly. runs into Belgium. The citadel is on a hill known in Latin as Mons Medius, whence the name of the town. There are industries in tanning, hat making, and vinegar, with miscellaneous local commerce. Formerly in the duchy of Luxemburg, Montmédy was taken by Louis XIV in 1657, and, after two days' bombardment, by the Prussians in 1870. The fortress, with works constructed by Vauban, was of great strategical importance at the start of the First Great War, for it dominated the rlys. from Belgian Luxemburg into France. The French evacuated it at the end of Aug., 1914, and it became a centre of German communications throughout the war. The Germans broke through N. of Montmédy in May, 1940, thus outflanking the Maginot line, and the town lay in the German zone of occupation during the Second Great War until liberated in the rapid Allied advance which took place at the end of Aug., 1944.

**Montmorenci**, ANNE, DUC DE (1492-1567). French soldier. He was born at Chantilly, March 15, 1492, and by 1522 had become a marshal, having distinguished himself at Marignano, 1515, and at the defence of Mézières, 1521. In 1525, with Francis I, he was defeated and taken prisoner at Pavia, but on the renewal of the war in 1536 he defeated Charles V at Susa, forced him to raise the siege of Marseilles, and two years later was made constable of France. In 1548 he crushed the insurrectionary movement in the

S.W. of France, and he took part in the war in the Boulonnais, 1549-50, and the disaster at St. Quentin, 1557. He was made a duke in 1551, and was mortally

wounded at St. Denis in 1567, fighting the Huguenots, and died in Paris on Nov. 12 of that year.

**Montmorenci**, HENRI, DUC DE (1595-1632). French soldier. A grandson of Anne de Montmorenci, he played a prominent part in the fighting against the Huguenots which began in 1621. For his defeat of the Spaniards in Piedmont in 1630 he was made a marshal. In 1632 he embraced the cause of Gaston d'Orléans, but was defeated at Castelnaudary, and executed at Toulouse, Oct. 30, 1632.

**Montmorency**. River of Quebec, Canada. A tributary of the St. Lawrence, it rises in the province, and flowing almost due south for about 80 m., falls into the larger river near Quebec. It is noted for the falls near the mouth, reached from Quebec, 8 m. away, by an electric rly. They are 265 ft. high, and supply Quebec with electric power. The river played an important part in the storming of Quebec by Wolfe, 1759.

**Mont Orgueil Castle**. Picturesque ruin on the island of Jersey, accessible by rly. from St. Helier. Standing on a rocky pinnacle dominating the village and harbour of Gorey, on the E. of the island, it was begun in the 10th century by the dukes of Normandy, and was given its name by the duke of Clarence, brother of Henry V. It successfully withstood a siege by the French in 1374. William Prynne (q.v.), while a prisoner here, 1637-40, wrote the poem *Mount Orgueil, or Divine and Profitable*

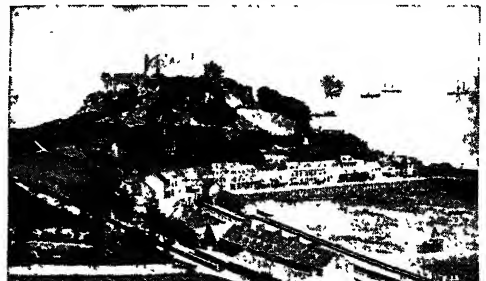


Anne, Duc de Montmorenci, French soldier



Montmartre, Paris. Place du Tertre. On the left is the church of S. Peter, and behind that the dome of the church of Sacré Coeur

Goutte-d'Or, and Chapelle. It lies to the N. of Paris, within the fortifications, built on a hill rising to the summit crowned by the large basilica of the Sacré Coeur, begun in 1875. The once famous Abbaye des Dames de Montmartre was founded in 1133. It was in Montmartre that the insurrection of the



Mont Orgueil Castle, Jersey, with the harbour and village of Gorey, from the St. Helier road

Meditations, raised from the Contemplation of these three Leaves of Nature's Volume: Rocks, Seas, Gardens. The castle was vested in the States by the crown in 1905.

**Montoro** (anc. *Epora*). Town of Spain, in the prov. of Córdoba. It stands on a peninsula caused by

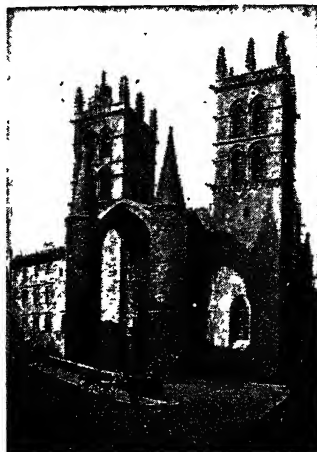


Montoro arms

the winding of the Guadalquivir, here spanned by a fine 16th century bridge, 27 m. by rly. N.N.E. of Córdoba. It produces olive oil, timber, cattle, etc. Once a Moorish fortress, it has many Roman, Gothic, and Moorish remains. There are medicinal springs in the neighbourhood. Pop. 24,200.

**Montpelier**. City of Vermont, U.S.A., the capital of the state and the co. seat of Washington co. On the Winooski river 40 m. by rly. E.S.E. of Burlington, it is served by the Montpelier and Wells and the Central Vermont rlys. It has a fine capitol. Most of the citizens belong to the Vermont civil service or work for the life insurance companies which have headquarters here. Extensive granite quarries are in the neighbourhood. The town was subject to extensive flooding, but this was mitigated by dams built during the Roosevelt "New Deal" administrations. Settled in 1787, Montpelier became the capital of the state in 1805, was incorporated in 1855, and chartered as a city in 1894. Pop. 8,006.

**Montpellier**. Town of France, capital of the dept. of Hérault. It stands on a hill 7½ m. inland from the sea at Palavas, and 31 m. by rly. S.W. of Nîmes, is the junction of several rly. lines, and is the headquarters of an army corps. Its university, founded in 1289, and reconstituted in 1896 after suppression in 1794, is noted for its faculty of medicine. It has distilleries, tanneries, and printing works, leather, chocolate, and candle industries, and trades in corn, wine, and silk. The cathedral, a 14th century foundation, is chiefly modern, with a remarkable porch. The church of St. Anne is also modern. The Musée Fabre contains a large collection of paintings, French and Dutch schools being specially well represented, and houses also the town library. The botanical gardens were founded 1593, and are the oldest in France. The Peyrou is a promenade originally laid out in



Montpellier, France. Porchway and towers of the cathedral of St. Pierre

the 17th century, with a lofty aqueduct and ornamental basin.

Montpellier dates probably from the 8th century, gained a charter in 1141, and in the 16th century developed an autonomous constitution. A centre of Calvinism, it was taken by Louis XIII in 1622. Before the Revolution it was the capital of Languedoc. French troops took it from the occupying Germans on Aug. 31, 1944. Population 93,102.

**Montpensier, ANNE MARIE LOUISE D'ORLÉANS, DUCHESSE DE** (1627-93). Born in Paris, May 29,



Duchesse de Montpensier

1627, she was a daughter of Gaston d'Orléans, the brother of Louis XIII. In the Fronde La Grande Mademoiselle sided with the princes, and took a spirited personal part in the capture of Orléans. In Paris she took command at the Bastille, and in the Faubourg St. Antoine fighting, July 2, 1652, fired on the royal troops. After the collapse, she retired to her estates of St. Fargeau until 1657. In 1681 she married Antonin, duke of Lauzun (1632-1723), a union which Louis had refused to allow eleven years before: the marriage proved unhappy. She died in Paris, leaving Memoirs, published 1729, which cover the period 1630-88. See Fronde.

**Montreal**. Largest city of Canada and chief financial and commercial centre. It stands on the S.E. side of the island of Montreal (q.v.) at the junction of

the Ottawa and St. Lawrence rivers, in the county of Hochelaga, prov. of Quebec. Largest inland port in the world, it is 980 m. from the Straits of Belle Isle, 420 m. from New York and 2,750 m. from Liverpool. The city proper has a pop. (1941) of 903,007, with a further 236,914 in suburban areas. Outside Paris, it is the largest French-speaking city, but it includes a large British element.

Originally an Indian village named Hochelaga, first visited by Jacques Cartier, of St. Malo, in 1535, it was founded as the Ville Marie de Montreal by Paul de Chomedy, Sieur de Maisonneuve, in 1642. The early years of its existence were marked by constant struggles against the hostile Iroquois, but by 1672 it had 1,500 settlers and rapidly became the centre of the fur trade, a position it enjoyed for nearly two centuries. Montreal was the last place to be surrendered to the British (Sept., 1760), a year after the capture of Quebec. In 1775-76 the city was occupied by troops of the Continental Congress, but the citizens

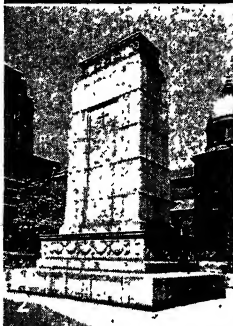


Montreal city seal

resisted all persuasion to join in the revolution against British rule.

Montreal has always been distinguished for its civic energy, and most of its growth has been due to the initiative of its own citizens. Modern development dates from the opening of the Lachine canal in 1825, which, with the chain of artificial waterways that followed it, opened the way for direct communication across the Great Lakes to the heart of the N. American continent. In 1836 the first Canadian rly. was opened between Laprairie, opposite Montreal, and St. Johns, in the eastern townships. Twelve years later a second railway, from Longueuil to St. Hyacinthe, was built. Both were the enterprises of Montreal merchants. Further developments were the building of the Grand Trunk rly. (1852); the construction of the Victoria bridge spanning the St. Lawrence (1860); and the completion of the transcontinental system of the Canadian Pacific rly., 1886. The most important factor in the growth of the city as a port has been the constant deepening of the ship channel which, begun in 1844, had (1947) a depth of 32½ ft. at low water, and brings ocean-going steamships to its quays. Port



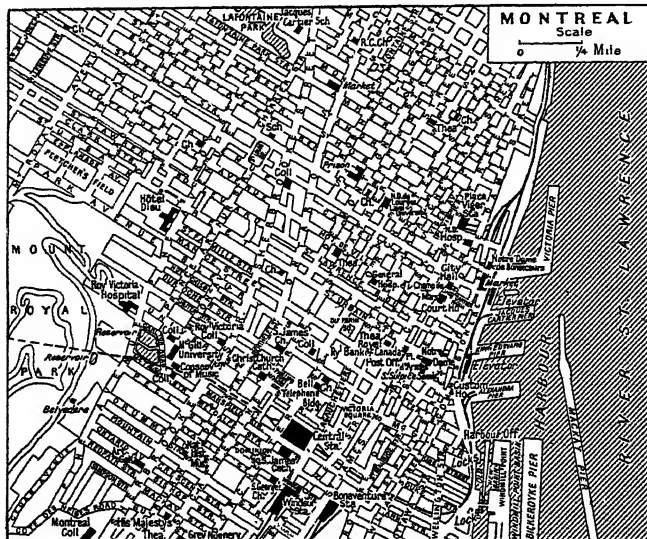


1. General view from Mount Royal, with the St. Lawrence beyond. 2. Montreal Soldiers' Memorial, 1914-1918. 3. S. James's Cathedral, modelled on S. Peter's, Rome, built in 1868; the roof-edge statues are of the twelve apostles. 4. The great church of

Notre Dame, built in 1824. 5. General view of the city with Mount Royal, behind, left. 6. Place D'Armes and statue of Paul de Chomedy, Sieur de Maisonneuve, founder of Montreal, and showing the headquarters of the Bank of Montreal, founded 1817

**MONTREAL: BUILDINGS AND SCENES IN THE COMMERCIAL CAPITAL OF CANADA**

Nos. 1, 2, 3, 4, 6 National Film Board of Canada, No 5, E N A



**Montreal.** Plan of the commercial capital of Canada, showing the principal buildings and docks on the St. Lawrence

facilities include 10 m. of deep draught wharf, four grain elevators with a total storage capacity of 15,162,000 bushels, a cold-storage warehouse of 4,628,000 cu. ft. capacity, 19 two-storey and 7 single-storey transit sheds, and a terminal rly. system of some 60 m. of which about 40 m. is electrified.

Montreal rises from the river in a series of terraces to the foot of Mount Royal (753 ft.), the city's most striking feature, and extends roughly for some seven miles along the St. Lawrence, and northwards for the same distance. It has an area of 50 sq. m. Beyond the great wharves of the harbour, with its rows of antiquated buildings, is the wholesale trade district: further along are the skyscrapers of the retail section, hotels, and theatres, while radiating from Mount Royal in all directions are the residential areas. The chief industrial plants are to the E. and W. In all, 12 bridges connect the island of Montreal with the mainland, the longest being Jacques Cartier bridge, 10,300 ft. and Victoria bridge, 6,600 ft.

Montreal is rich in ecclesiastical buildings. A huge cross crowning Mount Royal and illuminated at night, is visible for many miles. Mother-church of the city, Notre-Dame de Bonsecours is Perpendicular Gothic, with twin towers 227 ft. high. S. James's, a modified replica of S. Peter's at Rome, is the seat of the R.C. archdiocese of Montreal. S. Joseph's

Oratory, carved into and rising out of the rock of Mount Royal, is a celebrated shrine. Christ Church cathedral is the seat of the Anglican diocese of Montreal.

The city's numerous statues include those of Maisonneuve in the place d'Armes; MacDonald and Cartier, fathers of confederation, respectively in Dominion Square and at the foot of Mount Royal; Nelson in Jacques Cartier Place; and Queen Victoria in the square of the same name. There is a monument to the poet Burns.

Montreal has two universities, McGill, with a medical school, and Laval, an active centre of French culture. There are 49 hospitals, from the Hotel Dieu, founded in 1647, to the Royal Victoria, built in 1887, and there is an art gallery, as well as a city hall and other public offices. In the old city, the château de Ramezay, once the seat of the French governors, has become a museum of Canadiana. The chief daily papers are: (French) *La Presse*, *Le Canada*, *Le Devoir*, and (English) *the Gazette*, *the Herald*, and *the Star*.

Montreal has an abundant supply of electric power from Shawinigan Falls, Beauharnois, Rivière-des-Prairies, Chambly Cascades, and Cedar Rapids. The principal manufactures are: tobacco, cigars, and cigarettes, rly. rolling stock, clothing, ale and beer, electrical apparatus, boots and shoes, biscuits and confectionery, sheet metal products, castings and forgings, textiles,

cotton yarn, and cloth, paints, primary iron and steel products, and cement. It is also a printing and publishing and a copper refining centre. It is served by C.N.R., C.P.R., Rutland rly., Del. and Hudson, Central Vermont and N.Y.C. rlys.; by Trans-Canada air lines and Canadian Colonial Airways; and has two airports, St. Hubert and Dorval. The street rly. system of the city and suburbs has 280 m. of track, and there is also a bus service. The city is governed by a mayor and council, consisting of 90 councillors, of whom six are elected within the body to form the executive committee which administers the city's day-to-day business affairs.

**Montreal.** Island of Quebec prov., Canada, on which stands the city of the same name. It is 32 m. long by some 9 m. wide, and its total area of 200 sq. m. is the most densely populated in all Canada. Twelve bridges connect it with the mainland, of which the two longest are Jacques Cartier (10,300 ft.) and Victoria (6,600).

**Montreal, BANK OF.** Canadian banking company. Founded in 1817, it is the oldest bank in Canada. It has a paid-up capital of \$36,000,000, and acts as financial agent to the government of the Dominion of Canada in London. Its headquarters are in Montreal, and it has well over 500 branches throughout Canada and Newfoundland, and offices in New York, Chicago, and San Francisco. Its London offices are at 47, Threadneedle Street, E.C.2, and 9, Waterloo Place, S.W. 1.

**Montreuil.** Town of France, in the dept. of Pas-de-Calais. It is on the river Canche, 8 m. from its mouth, and 20 m. S.S.E. of Boulogne, and on the main rly. Boulogne-Amiens-Paris. Its ancient ramparts still survive. The church of S. Sauve dates from the 12th century. Once on the sea, as indicated by its official name Montreuil-sur-Mer, it was long a noted posting-stage on the Calais-Paris highway. It is referred to in Sterne's *A Sentimental Journey*. In the First Great War the École Militaire here was the British G.H.Q. from 1916 to 1919. During the Second Great War it lay in the German zone of occupation until liberated, Sept. 4, 1944, by units of the 1st Canadian army during their rapid advance on Boulogne. Pop. 69,838.

**Montreux.** Series of lakeside villages of Switzerland, in the canton of Vaud. They stand on the

N.E. shore of Lake Geneva, about 50 m. N.E. of Geneva, and extend from Clarens to Veytaux, including also Vernex, Les Planches, Glion, Colonges, and Territet. The central point is the town of Montreux-Vernex, with a rly. station and steamboat pier, quays, villas and gardens, a college, a kursaal, etc. There are English churches at Territet, Clarens, and Glion. Montreux is a tourist resort. Pop. 20,000.

**Montreux Conference.** Conference opened June 22, 1936, between the representatives of Turkey, Great Britain, France, Russia, Japan, Greece, Bulgaria, and Yugoslavia, for the purpose of revising the Straits convention signed at Lausanne in 1923. Under the new agreement, signed July 20, 1936, Turkey recovered her sovereignty over the Dardanelles with full right to remilitarise the zone. The international commission of the Straits was dissolved. Freedom of commerce was guaranteed in peace and in war, and limitations on the passage of foreign warships into and through the Black Sea were laid down; belligerents were denied the use of the Straits except with the authority of the League of Nations, and in case of war or threatened aggression Turkey had the right to close them to navigation, subject to a two-thirds vote of the League council. In 1946 Turkey refused a Russian demand for a share in the defence of the Dardanelles unless such a revision of the Montreux convention were agreed to by all the signatories.

**Montrose.** Royal, mun., and police burgh, and seaport of Angus, Scotland. It stands on a peninsula where the South Esk falls into the North Sea, the river here forming an estuary and also what is known as Montrose basin, these being S. and W. of the town respectively. It has rly. connexion with Dundee, and is 31 m. N.E. of that city. The buildings include the parish church, town hall, academy, infirmary, etc. There is a harbour with docks and other



Montrose arms

accommodation. In addition to fishing and shipping, the industries include flax-spinning and the making of linen, rope, etc., also shipbuilding, fruit and vegetable canning, brewing, and the manufacture of mashed potato powder. Montrose was made a burgh in the 12th century, and was a flourishing seaport in the later Middle Ages. The academy here was the first in Scotland where Greek was taught. The council supplies water, and owns two golf courses. During the First Great War there was an aerodrome here, which later became an R.A.F. maintenance unit. Montrose basin covers about 2 sq. m. In the estuary is the island of Rossie or Inchbraycock, connected by a bridge with the town proper. Market day, Fri. Pop. 11,000.

**Montrose, Duke of.** Scottish title borne since 1707 by the family of Graham. In 1488 the title was given to David Lindsay, earl of Crawford. It did not pass to his descendants, and, in 1505, William, 3rd Lord Graham, who had married a relative of the late duke, was made earl of Montrose. His grandfather had been made Lord Graham in 1445, and he himself was killed at Flodden. John, the 3rd earl, who succeeded to the title in 1571, was chancellor of Scotland, 1599-1604, and regent of the kingdom for James VI after that king succeeded to the English throne in 1603. He died in 1608. The 5th earl, the soldier, James Graham (*v.i.*),

was made a marquess 1644, and was the most famous of the family. James, the 4th marquess, was a leading politician at the time of the revolution of 1688. He supported the accession of George I, helped forward the union of the parliaments, and in 1707 was made a duke. He was a secretary of state and keeper of the great seal of Scotland, 1716-33. In 1853 the earl of Crawford claimed the dukedom, but his suit before the house of lords failed. The duke sits in the lords as Earl Graham, a title dating from 1722. His seats are Buchanan Castle, near Glasgow, and Brodick Castle, Isle of Arran. An eldest son is known as the marquess of Graham. James (b. 1878) became 6th duke in 1925.

**Montrose, James Graham, 1st Marquess of (1612-50).** Scottish soldier. He succeeded his father as 5th earl of Montrose, Nov. 14, 1626, and then went to the university of St. Andrews. His mother was Margaret, eldest daughter of the 1st earl of Gowrie. He married in 1629 Magdalen, daughter of the future earl of Southesk. In 1637 he took an active part in drawing up the National Covenant; in 1640 he was with the Presbyterian army invading England; but once Charles I had allowed Scotland to have its own church, Montrose found himself in complete antagonism to Argyll and became in Scotland the foremost champion of the crown. In 1644, when the Scots army entered England in alliance with the English parliament, Montrose obtained a commission as lieutenant-general from the king at Oxford, passed into Scotland in disguise, and on Aug. 30 raised the well-affected clans of the Highlands for the king. With a force numbering barely 2,000 men, Montrose, created mar-

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1st Marquess of Montrose, Scottish soldier  
After Dobson



Montrose, Angus. General view of the town, with the harbour and quays



Mont St. Michel, France. The south-east aspect of the rock, crowned by the Benedictine abbey, seen from the causeway

guess, conducted in the Highlands a brilliant series of campaigns, winning victory after victory over forces thrice as numerous as his own: at Tippermuir, Sept. 1; Aberdeen, Sept. 13; Inverlochy Feb. 2, 1645; Auldearn, May 9; Alford, July 2; Kilsyth, Aug. 15, when for once he had 5,000 men. This victory seemed to place the Lowlands at his mercy, but when he advanced the clansmen melted away, and he had fewer than 1,000 men when he was surprised and his troops were cut to pieces by David Leslie at Philiphaugh, Sept. 13. So ended the "year of victories."

Finding the royalist cause hopelessly lost, Montrose escaped abroad; but in 1649, when the English parliament had beheaded Charles I, he resolved on one more desperate effort on behalf of Charles II. He landed in Caithness, but few men rallied to his standard, his small force was dispersed at Corbiesdale, April 27, 1650, and he himself was captured and betrayed by Macleod of Assynt into the hands of the Scots government, by whom he was sentenced to be hanged and dismembered as a traitor. The sentence was carried out in Edinburgh on May 21. Eleven years later the remains of the "great marquess" were buried in S. Giles's, where a monument was erected in 1888. His romantic career, military genius, magnanimity, and the small body of his poetry have endeared Montrose to succeeding generations of Scots.

**Bibliography.** *Memoirs*, 2 vols., M. Napier, 1856; *Memoirs* trans. from the Latin of G. Wishart, A. Murdoch and H. Simpson, 1893; *Lives*, Lady Violet Greville, 1886; J. Buchan, repr. 1947.

**Mont St. Michel.** Village of France, in the dept. of Manche. It

is built on a steep granite rock about 160 ft. high, in the Bay of St. Michel, about  $\frac{1}{2}$  m. from the mainland to which a raised causeway runs. On top of the rock stands the old Benedictine abbey, and the picturesque effect of the rock crowned with the great church and spire, has made it a widely famous landmark.

The abbey, founded by S. Aubert of Avranches in 708, was one of the greatest religious houses of Normandy, a favourite place of pilgrimage, and became a notable centre of learning. Monks from the abbey of S. Maur replaced the Benedictines in 1622, but the buildings became state property at the Revolution. Under Napoleon III several political prisoners were kept here, but in 1863 it again became a religious house. Since 1874 it has been under the care of the Commission des Monuments Historiques. The church, begun in the 11th century, has a 15th century Gothic choir and a tower and spire; the 13th century cloisters are of carved granite, and the large building known as La Merveille is also notable. The bay is noted for dangerous quicksands; much land has been reclaimed on the S. shore near the Mont.

**Montserrat.** One of the Leeward Islands, British W. Indies. It is situated in the Caribbean Sea, 27 m. S.W. of Antigua, and has a length of 12 m. and maximum breadth of 8 m.; area about 32 $\frac{1}{2}$  sq. m. Of volcanic formation, it rises in Mt. Chances to over 3,000 ft. It has thermal springs, and at the Soufrière, the highest point on the island, are steam vents and sulphur and gypsum deposits. Well timbered and watered, it produces and exports cotton, cotton seed, limes, pineapples, oranges, bananas, tomatoes, onions, car-

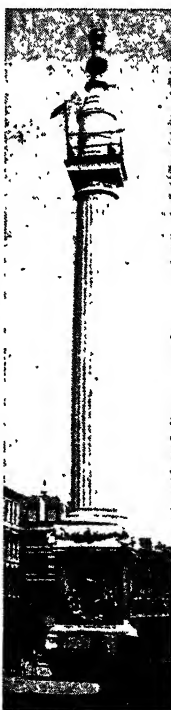
rots, and other fruits and vegetables. Lime juice and citrate are manufactured. The chief town is Plymouth. First colonised by the English in 1632, Montserrat was occupied by the French for short periods in the 17th and 18th centuries. There are executive and legislative councils. Pop. 14,329.

**Montyon, Antoine Jean Baptiste Robert Augé, Baron de** (1733-1820). French philanthropist. Born in Paris, Dec. 23, 1733, he became a lawyer, and in 1775 was made a councillor of state. Emigrating at the outbreak of the Revolution, he remained abroad, mostly in London, until the Restoration, spending large sums of money in helping other *émigrés*. Returning to Paris in 1814, he reorganized a series of prizes instituted by him before the Revolution. Before his death, Dec. 29, 1820, he bequeathed £400 to each Paris hospital, and similar sums for works to ameliorate the conditions of the working classes.



Baron de Montyon, French philanthropist

**Monument.** Any considerable



Monument, London, from Fish Street Hill

work of architecture or sculpture designed to commemorate an act or person important in national or local history. The term also embraces public buildings, official and otherwise, without such historical significance. See *Ancient Monuments*.

**Monument,**

**THE.** A fluted column of the Doric order in Fish Street Hill, London. Designed by Wren to commemorate the Great Fire, it was completed in 1677 at a cost of £13,700, and stands near the house in Pudding Lane

in which the fire originated. The column is 202 ft. high and is surmounted by a metal urn and ball of fire 42 ft. high. Inside the column, a spiral stairway of 345 black marble steps leads to a railed platform surrounding the cornice. In the mid-19th century this platform was caged in after people had attempted to commit suicide by throwing themselves from the column.

Edward Pierce was the sculptor of the dragons at the four angles of the base of the column. C. G.



Monza, Italy. Façade of the 14th century cathedral of S. Giovanni Battista, in the Lombardo-Gothic style

Cibber executed the relief on the pediment, and Dr. Thomas Gale, dean of York, composed the Latin inscriptions. After the Titus Oates conspiracy, the City of London court of aldermen ordered the following inscription to be cut round the plinth of the monument in allusion to the unfounded charge that the Great Fire had been started by Catholics:

This pillar was set up in perpetual remembrance of that most dreadful burning of this Protestant city, begun and carried on by the treachery and malice of the Popish faction in the beginning of September in the year of our Lord 1666 in order to the carrying on of their horrid plot for extirpating the Protestant religion and old English liberty, and the introducing of Popery and slavery.

The inscription was obliterated by order of James II, but was cut deeper in the reign of William III, a circumstance inspiring Pope's indignant lines:

Where London's column, pointing  
at the skies,  
Like a tall bully, lifts the head and  
lies.

The inscription was finally erased in 1831. The Monument gives its name to a London Transport rly. station on the Inner Circle.

**Monumenta Germaniae Historicae.** Collection of ancient and medieval German documents. Its publication was started under the auspices of Stein in 1819. It comprises authors, laws, documents,

inscriptions, and letters, among which the work of historians and authors has yielded more than 60 huge volumes. From 1886 the undertaking was a matter of state. The Nazi government trusted it to the ministry of education and tried to exploit it for "racial" purposes. Much was lost with the destruction by bombing of the Prussian state library in Berlin.

**Monza.** City of Italy, in the prov. of Milan. The ancient Modicia, it is situated on the river Lambro, 8 m. by rly. N.N.E. of Milan, and was the ancient capital of the Lombard sovereigns. The treasures of the cathedral, founded 595 by Queen Theodelinda, include her crown and fan and the famous iron crown of Lombardy, with which Charlemagne was crowned in 774 and Napoleon in 1805. The church of San Gerardo is built in the form

of a rotunda. The town hall dates from 1293. Felt hats, cotton, silk, and leather goods are manufactured. Here, on July 29, 1900, King Humbert was assassinated. Pop. 43,750.

**Mood** (Lat. *modus*, manner) or **MODE**. In grammar, the form of a verb which indicates the special manner in which an action is regarded. Moods are the indicative (simple statement), subjunctive (contingent), imperative (command). The infinitive is not really a mood, but the case of a noun. The subjunctive, so common in other languages, has no distinct form in English, although phrases like "if it be true," "if I were to go" represent the shade of meaning.

**Mood.** In medieval music, the relations of the large, the long, and the breve. If the two former were involved, it was called greater; if the two latter, then it was called lesser. Either might be perfect or imperfect. In the greater mood perfect, one large equalled three longs; if imperfect, two longs only. In the lesser mood perfect, one long equalled three breves; if imperfect, two breves only.

**Moodkee** or **MUDKI.** Village of the Punjab, India. It is 26 m. S. of the Sutlej on the road from Karnal to Ferozepore. Here, on Dec. 18, 1845, was fought the first battle of the Sikh War of 1845-46. After a long and hasty march,

necessary owing to the rapid movements of the enemy, Sir Hugh Gough was unexpectedly attacked by the Sikhs, whose cavalry made a determined attempt to cut off the British line of retreat. A desperate battle ensued, marked by the flight of Gough's native troops, and, owing to the confusion, the firing of one white regiment into another. Eventually the British prevailed, and the Sikhs, leaving 17 guns behind them, fled. The British lost 872 killed and wounded out of 10,000 engaged. The Sikhs were perhaps 20,000 strong. See Sikh Wars.

**Moody, DWIGHT LYMAN** (1837-99). American revivalist. Born at Northfield, Mass., Feb. 5, 1837, he became a business man in Chicago. Later he took charge of a Y.M.C.A.; and after 1840 in company with Ira Sankey (1840-1908) travelled throughout America and Great Britain,



D. L. Moody

holding revival services. His later years were devoted to organizing a training institution for lay preachers at Northfield. He published volumes of sermons and addresses, and was associated with his colleague in the compilation of Sacred Songs and Solos, 1873. He died Dec. 22, 1899. There is a Life, by W. R. Moody, new ed. 1930.

**Moody, FANNY.** British soprano, whose career is noticed in the article on her husband, Charles Manners (q.v.).

**Moody, HELEN WILLS.** American lawn tennis player who became famous under her maiden name of Wills. See Wills-Moody.

**Moody, WILLIAM VAUGHAN** (1869-1910). American poet and dramatist. He was born at Spencer, Indiana, July 8, 1869, and educated at Harvard. After travelling in Europe he became instructor in English at Chicago university. The first of his poetic plays, *The Masque of Judgment*, 1900, was followed by *The Fire-Bringer*, 1904, and *The Faith-Healer*, 1909. In 1907 his prose play, *The Great Divide*, was produced in New York. He died Oct. 17, 1910, and in the same year was published *Gloucester Moors*. He collaborated with R. R. Lovett in *A History of English Literature*, 1907.

**Mook, HUBERTUS JOHANNES VAN** (b. 1894). Netherlands colonial administrator. He was born in



Batavia, and educated at Surabaya college and Amsterdam, Delft, and Leyden universities. He entered the legal department of the Netherlands Indies civil service in 1918. In 1940 he was chairman of the Netherlands delegation which discussed economic relations with Japan. After the Japanese occupation of the N.E.I., he escaped, reaching London in May, 1942, where he took up the posts

of colonial minister in the exiled Netherlands govt. and lieut.-gov. of the Indies. In Sept., 1944, he became head of a provisional govt. of the N.E.I. set up in Australia by Dutch royal decree; he returned to Batavia, Oct. 3, 1945, and played a leading part in setting up the united states of Indonesia (*q.v.*). But differences with the Netherlands govt. led to his resignation in 1948.

is proved by observation of the occultation of stars. This accords with expectation, as the surface gravity (about  $\frac{1}{6}$  that of the earth) is too small to retain an atmosphere for long.

To the naked eye the surface of the moon shows a number of grey spots; these were called "seas" by early observers, and the name remains, though they are merely plains, covered with some dark material. The chief of these bear the names Crises, Tranquility, Serenity, Vapours, Showers, Storms, Clouds, Humours, Nectar, and Fecundity. Numerous craters are striking, the larger being fully 60 m. across. A small telescope will suffice to show them, the best time to look being about first quarter, since the shadows are most conspicuous then, and help to throw the surface into relief. Copernicus, one of the grandest, is 56 m. across; the interior is fairly level, but has a few peaks 2,000 ft. high. The ring round the crater is 12,000 ft. high. It is broken into terraces, and has in places a slope of 60°. Copernicus, Tycho, Kepler, and Aristarchus are the centres of wonderful systems of bright rays or streaks which radiate from these craters, in star-like patterns, often several thousand miles in length. They are most conspicuous in the full moon, and pass indifferently over hill and valley, indicating their independence of these inequalities, and are probably formed of some crystalline substance, extruded from the interior through cracks in the crust.

There are a few continuous mountain ranges on the moon, in particular the Apennines, 460 m. long, well seen after first quarter. The Alps are a smaller range, but interesting from the great valley through them, whose sides are so straight that they might have been cleft with a hatchet. There are numerous smaller clefts on the moon, known as rills. Near the crater Thebit is the Straight Wall, with one side 1,000 ft. higher than the other.

The origin of the craters is a matter of dispute. There are two theories current: that they are volcanic in origin, and that they result from meteoritic bombardment. Both explain the observed facts equally well. Few changes

## THE MOON: ITS ASPECT AND PHASES

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*Related articles include those on Astronomy; Planet; Stars; Sun.*

*See also Observatory, Telescope; and the biographies of Halley, Herschel, and other eminent astronomers*

The moon is the satellite of the earth. It revolves round the earth in 27.32 days in a nearly circular orbit, at an average distance of 238,857 m., the greatest and least values being 252,710 m. and 221,463 m. Its diameter is 2,160 m., and it shines by reflecting sunlight. Apparent changes of shape are due to the different amounts of the sunlit hemisphere that are turned towards us as the moon revolves. When nearly between the earth and the sun, its dark side is towards us, and it is usually invisible; this is called new moon; when 90° distant from the sun, we see half the sunlit hemisphere; this occurs at first and last quarter. The full moon is opposite to the sun, and appears fully illuminated. The interval between two new moons, a lunation, is 29.53 days; longer than the revolution, since the sun has advanced during the 27.32 days, and the moon requires 2 days more to overtake it. The ordinary year of the Jews and many ancient nations consisted of 12 lunations or 354 days; seven years out of 19 had 13 lunations, the agreement with the solar year being approximately preserved.

The moon's path round the earth makes an angle of 5° 8' 40" with the ecliptic, and intersects the ecliptic at two points, the nodes, which have a backward motion, going completely round the sky in 18½ years. When new moon occurs near either node, there is an eclipse of the sun. These eclipses are total only over narrow zones of the earth's surface, but lunar eclipses, which occur when the full moon enters the earth's shadow, are seen over an entire hemisphere. Even

when totally immersed in the shadow, the moon generally remains visible, of a coppery hue; the sunlight being bent into the shadow by refraction in the earth's atmosphere.

The moon, the density of which is only  $\frac{3}{8}$  that of the earth, plays the chief part in causing tides in our oceans. It attracts every part of

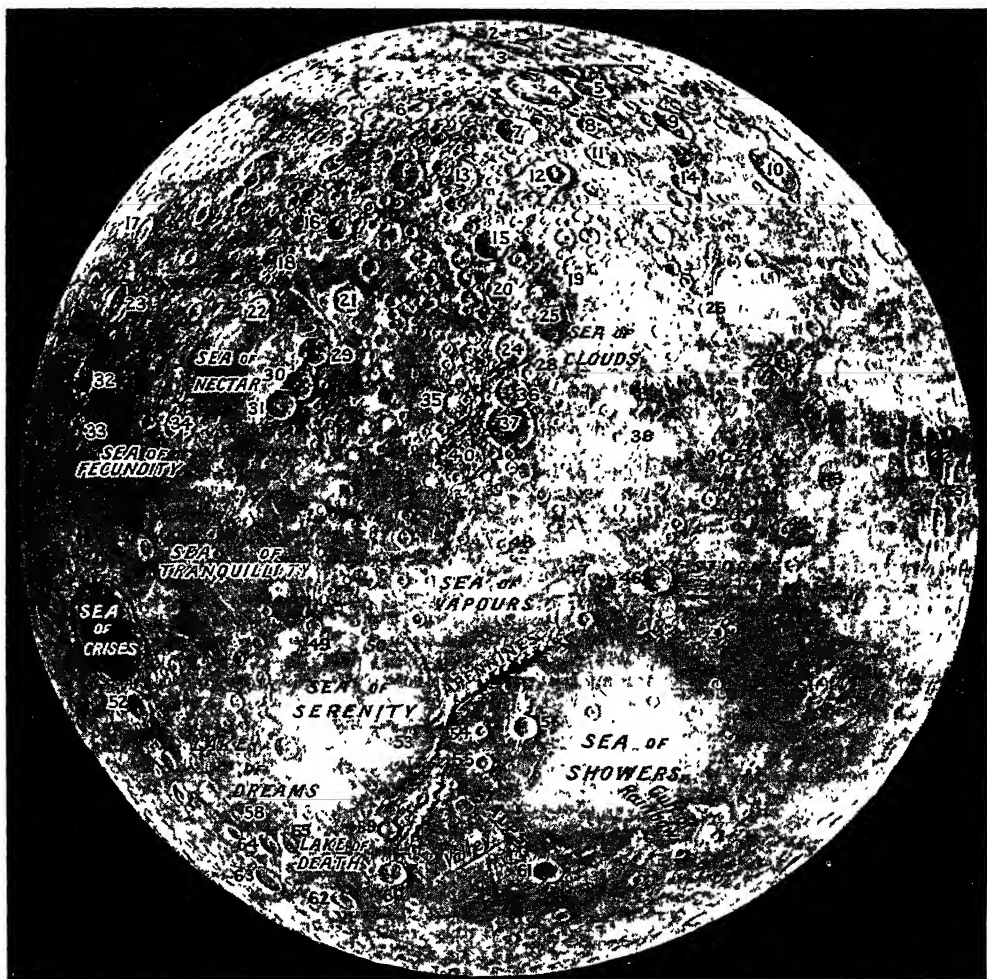


Moon. Age 14 days, 1 hour

*Photographed at Luck Observatory, Mount Hamilton, California, U.S.A., by courtesy of the Director*

our globe, but the parts nearest to it are attracted more strongly than those farther away. A deformation is thus produced in the surface of the ocean. The moon's meridian passage gets later by about 50 minutes each day; the tides get later by about the same amount, but the matter is complicated by the fact that the sun also causes tides. The tide is a combination of the two gravitational forces.

The moon rotates on its own axis in the same time as that of its revolution round the earth, so always turning the same face to the earth. It is without an atmosphere, as



Aspect of the known face of the moon, showing the "seas," lakes, and craters. The chief craters are numbered as follows:—1. Newton. 2. Short. 3. Moretus. 4. Clavius. 5. Scheiner. 6. Bacon. 7. Maginus. 8. Longomontanus. 9. Schiller. 10. Schickard. 11. Wilhelm I. 12. Tycho. 13. Stoeffler. 14. Haenzel. 15. Walter. 16. Riccius. 17. Farmerius. 18. Piccolomini. 19. Pitavus. 20. Purbach. 21. Sacrobosco. 22. Fracastorius. 23. Petavius. 24. Arzachel. 25. Thebit. 26. Hippalus. 27. Gassendi. 28. Alpetragius. 29. Catherina.

30. Cyrillus. 31. Theophilus. 32. Vendelinus. 33. Langren. 34. Guttenberg. 35. Albatagnus. 36. Alphonsus. 37. Ptolemy. 38. Boupland. 39. Réaumur. 40. Hipparchus. 41. Letronne. 42. Grimaldi. 43. Flamsteed. 44. Encke. 45. Bioccoli. 46. Copernicus. 47. Stadius. 48. Pallas. 49. Pliny. 50. Menelaus. 51. Aristarchus. 52. Cleomedes. 53. Lignaeus. 54. Autolycus. 55. Aruillius. 56. Archimedes. 57. Cassini. 58. Struve. 59. Eudoxus. 60. Aristotle. 61. Plato. 62. Gartner. 63. Endymion. 64. Atlas. 65. Hercules.

#### MOON. APPEARANCE OF THE EARTH'S SATELLITE TO A TERRESTRIAL OBSERVER

Based on Nasmyth and Carpenter's Picture Map. By courtesy of John Murray

have ever been observed on the moon's airless, waterless surface, owing to the absence of weathering. The surface reflects sunlight and conducts heat as brown pumice dust would be expected to do.

The lunar seas were evidently once covered with liquid. Fracastorius, on the border of the sea of Nectar, was once a complete ring, but the wall towards the sea has been destroyed, leaving, however, a mark to show where it stood. Numerous marks of other ruined formations are discernible on the seas. The destroying agency is thought to have been liquid lava,

either ejected in sudden streams from the interior, or produced by the impact of some large body from outside.

While there is no present volcanic activity on the moon, there is an agency which may produce some changes in it; this is the great difference of temperature between day and night. The rocks in the sunshine probably reach the temperature of boiling water, while at night, a fortnight later by terrestrial reckoning, they reach  $-243^{\circ}\text{F}$ . The alternate expansion and contraction may cause the occasional collapse of

steep walls. Thus the crater Linnaeus, formerly described as very deep, is now a shallow, whitish depression.

The complex problem of the motion of the moon arises from the action of the sun, whose attraction on the earth and moon is appreciably different. The eccentricity of the orbit, the direction of its major axis, the orbit-plane, are all continually changing. The earth's equatorial protuberance and the planetary attractions also produce appreciable disturbances.

The precession of the equinoxes arises from the attraction of the

sun and moon, especially the latter, on the earth's equatorial protuberance. It is a slow reeling of the earth's axis, causing it to sweep out a circle in the sky,  $47^\circ$  in diameter, in a period of 26,000 years. It was discovered by Hipparchus. It enables us to fix the date when the constellations were mapped out and named (about 2,700 B.C.), that being the date when the south pole occupied the centre of the region left blank by the early observers.

**Bibliography.** The Moon, R. A. Proctor, 3rd ed. 1886; The Moon, Considered as a Planet, a World, and a Satellite, J. Nasmyth and J. Carpenter, 1903; The Moon, W. H. Pickering, 1904; The Moon, W. Goodacre, 1931.

**Mõõn.** Name sometimes used for the Estonian island of Muhu (q.v.) in the Baltic Sea.

**Moon, WILLIAM** (1818-94). British inventor. Born at Horsmonden, Kent, Dec. 18, 1818, he became partially blind as a child and totally blind in 1840. In 1845 he invented a system of embossed type for the blind, which was widely used. To facilitate the publication of the Bible in his type he invented a process of stereotyping which much reduced the cost of production. So successful was his system that he extended it to foreign languages. His wife, born blind, had imagined horses as standing upright on two legs. Moon thereupon produced pictures in relief, which could be studied by blind people. He died at Brighton, Oct. 10, 1894.

**Moonlighters.** Name given to perpetrators of outrages in the Irish agrarian disturbances of 1880-87. Following the rejection by the house of lords of the Compensation for Disturbances Bill, which was to check evictions and to restrain landlords, a series of outrages took place, usually at night. Murder, cattle-maiming, arson, and pillage were frequent, and the Moonlighters instituted a reign of terror which lasted until Balfour's Crimes Act of 1887. See Coercion Acts; Ireland.

**Moonlight Sonata.** Composition by Beethoven. Popular name given to the Sonata quasi una fantasia in C sharp minor, the second of two which together form Beethoven's op. 27. The title is said to have been derived from an expression of Rellstab, the critic, who compared the first movement to a boat wandering by moonlight on the Lake of Lucerne. One of the most popular of Beethoven's pianoforte works,

it was dedicated to the Contessa Gioletta Guicciardi.

**Moonrakers.** Name applied to natives of Wiltshire. It is traced to a story of some countrymen who, seeing the moon's reflection in a pond, tried to rake it out. But another version tells that they were smugglers who, surprised while dragging for hidden kegs of brandy, baffled the excisemen by assuming this simplicity.

**Moonstone.** Semi-precious stone. It is a translucent, colourless feldspar, mostly orthoclase or albite, which is usually cut *en cabochon*, but also faceted. It reflects a bluish milky light, hence its name. It is also known as fish's eye, wolf's eye, and water opal.

**Moonstone, THE.** Novel by W. Wilkie Collins (q.v.), first published in 1868. Turning upon the possession of a valuable diamond, the highly intricate plot, which abounds in dramatic situations, is developed in the successive narratives of the various parties to the drama. The novel is one of the first detective stories to command a place as serious literature.

**Moonta.** Township of S. Australia. It stands on Spencer Gulf, 134 m. by rly. N.N.W. of Adelaide, and has carried on copper mining since 1861. Pop. 3,300.

**Moonwort** (*Botrychium lunaria*). Fern of the family Ophioglossaceae. A native of Europe, and the



Moonwort. The two branches of frond

temperate and cold regions of both hemispheres, it has a small tuberous rootstock and fleshy roots. It produces a single annual frond which is divided, one branch bearing a double row of half-moon-shaped leaflets, the other branch having secondary branches which bear rows of leathery spore-capsules, ultimately splitting to release the spores. Formerly it was believed to have the magic power of loosening locks, bolts, nails, etc.

**Moor.** A term somewhat loosely applied to tracts of unenclosed, usually high lying land, not primarily used for pasture. It probably has its origin in a word meaning to die and thus originally connoted dead or sterile. The soil of moorland is characteristically acid, be it relatively dry, or a deep,

wet peat. Hence it is unfavourable to the growth of many crop plants. On the other hand soil acidity encourages the development of heather, bilberry, mat grass, and a number of other oxyphilous species, one or other of which forms the predominating vegetation of moorland. In this sense the term embraces the bogs of Ireland where sphagnum abounds, the mosses of the Pennine chain where cotton grass predominates, those areas covered with deer sedge in the west and north-west of Scotland, on Exmoor and Bodmin moor in S.W. England, and the granite areas of the last locality, which have purple moor grass as their chief plant inhabitant. In a more restricted sense, the heather-covered grouse moors of Scotland, similar areas in Somerset, of the Pennines, the Wicklow, and the Mourne mountains are more typical. Their vegetation resembles that of the lowland heath closely except in containing a greater proportion of lichens, liverworts, and mosses and in that bilberry occurs in place of heather. Both have moderately free soil drainage and a relatively thin layer of peat in contrast to the wet conditions of the bog and moss. The acid conditions present favour the development of the fungus *Phoma* with which heather must establish mycorrhizal relations in order to live. In both, too, conditions such as recurrent fires or strong winds prevail and so prevent the establishment of trees in numbers sufficient to compete with the heather to its ultimate extinction. See Mycorrhiza. Consult The British Islands and their Vegetation, A. G. Tansley, 1939.

**Moor, SIR FREDERICK ROBERT** (1853-1927). South African statesman. After working in the Kimberley diamond mines, 1872-80, he settled in Natal, and in 1886 was elected to the legislative assembly. Minister for native affairs, with a brief interval, from 1893 to 1906, he was identified with all movements furthering the self-government of the state, and in 1906 became premier. Attending the 1907 colonial conference of premiers, in 1910 he held, conjointly with the premiership, the portfolio of commerce and industries in the cabinet of South Africa. He was knighted in 1911, and died March 18, 1927.

**Moorcroft, WILLIAM** (1872-1945). British potter. Born Mar. 27, 1872, he studied art at S. Kensington and Paris. A skilled potter, painter, and chemist, he spent the greater part of his life in originat-

ing and developing the pottery named after him, exhibiting regularly at British and foreign exhibitions. In 1928 he was appointed potter to Queen Mary, and showed 11 pieces of his ware at the Exhibition of British Art in Industry, 1935. He died at Trentham, Staffs, Oct. 14, 1945. He is represented at the Museum of Fine Arts, Syracuse, N.Y., U.S.A., and at Toronto art gallery.

**Moore, ALBERT JOSEPH** (1841-1893). British painter. Born at York, Sept. 4, 1841, he studied



A. J. Moore,  
British painter

at the York School of Design before going to the R.A. schools in London in 1858. He went direct to nature, sketching in the Lake district, and the N. of France. He did much decorative work including mosaic panels for the central hall in the houses of parliament. In 1883 he painted Reading Aloud, his best-known work. His chief pictures include: Blossoms (Tate Gallery), 1881; Dreamers, 1882; Summer Night, 1890. He died Sept. 25, 1893.

**Moore, GEORGE** (1852-1933). An Irish writer. He was born at Moore Hall, co. Mayo, Ireland, on Feb. 24, 1852. Educated at Oscott, he spent 10 years studying art in Paris, where he met Manet (whose portrait of him is in the Metropolitan Museum, New York) and other Impressionists. Doubtful of his ability as a painter, he settled in London and became a writer. His first publications were poems, strongly influenced by Baudelaire: Flowers of Passion, 1872, and Pagan Poems, 1882. These were without merit, and he abandoned poetry for prose.

A Modern Lover, 1883, attracted little attention, but A Mummer's Wife, 1885, and A Drama in Muslin, 1886, were among outstanding novels of their time. Esther Waters, 1894, most ambitious of his realistic novels, established his fame, and marked the end of his first phase.

After the outbreak of the S. African War, Moore, who adopted a pro-Boer attitude, lived in Dublin until 1910. He wrote for the Abbey Theatre, and became absorbed in the revival of Irish as a living language. During his sojourn there he produced two important volumes, The Untilled Field (short stories), 1903; and

The Lake, 1905. Memoirs of My Dead Life, 1906, was the forerunner of a long autobiographical work first appearing as a trilogy Ave, Salve, Vale, 1911-14, and later published in two volumes as Hail and Farewell.

The Brook Kerith (dramatised as The Passing of the Essenes, 1931)—a romantic reconstruction of the life of Christ—marked the culmination of his powers as a stylist, though as literature it has been described as one of the most placid books in the language.

To Moore's later years belong two further autobiographical works notable for brilliant dialogues: Avowals, 1919; and Conversations in Ebury Street, 1924. The latter ranks with Hail and Farewell as a masterpiece of observation and philosophical disquisition. His last years were spent in revising his earlier works. He died in London Jan. 21, 1933.

Whimsical, individualistic, and perverse, Moore antagonised many by his love of self-dramatisation and exaggeration. In his artistry and eloquence as a writer he has few equals. *Consult* Lives, by S. Mitchell, 1916; J. Freeman, 1922; H. Wolfe, 1931; J. Hone, 1936. Letters (ed. J. Eglinton), 1942.

**Moore, GRACE** (1901-1947). American singer and film actress. Born at Jellicoe, Tenn., U.S.A.,



Grace Moore,  
American singer

Dec. 5, 1901, she was educated there, and studied singing at Washington. After making her debut in musical comedy at Boston, she later appeared in New York and in 1924 continued her singing studies in Europe, appearing in La Bohème at Milan. She repeated her performance at the New York Metropolitan and scored an immediate success. She first appeared at Covent Garden in 1935. Making her screen debut in 1930, she achieved great success in One Night of Love, 1935. Later films included Love Me Forever, The King Steps Out, For You Alone. She was killed in an air crash at Copenhagen airport on her way to Stockholm,



George Moore,  
Irish author

Jan. 26, 1947. Her autobiography You're Only Human Once appeared shortly after her death.

**Moore, HENRY** (1831-1895). British painter. Born at York, March 7, 1831, he studied under his father, and entered the R.A. schools in 1853. In 1886 he was elected A.R.A., and in 1893 R.A. A prolific artist and frequent exhibitor, his chief works, paintings of the sea, include A White Calm, 1858; Catspaws off the Land, 1885 (Tate Gallery); Clearness After Rain, 1887; A Breezy Day in the Channel, 1888; Summer at Sea, 1893. He died at Margate, June 22, 1895.

**Moore, HENRY** (b. 1898). British sculptor. Son of a coal miner, he was born at Castleford, Yorks, July 30, 1898, and educated at the grammar school there. After the First Great War he studied at Leeds and the Royal College of Art. Influenced by negro



Henry Moore,  
British sculptor

and Mexican sculpture, his work was characterised by monumentality and strength, displaying a strong feeling for the simple, rounded forms of life, and the effect of natural forces upon stone. In his later drawings, especially those inspired by scenes in London air raid shelters during the Second Great War, he achieved depth and originality of design more intricate than could be contained in isolated objects of stone. Appointed a trustee of the Tate Gallery, 1941, he occupied a leading position among contemporary sculptors, and held one-man exhibitions at the chief galleries of London and New York. Examples of his work are at the Tate Gallery and Victoria and Albert Museum, London, and Museum of Modern Art, New York. *See* Art illus. pp. 664-665.

**Moore, SIR JOHN** (1761-1809). British soldier. Born in Glasgow, Nov. 13, 1761, he was a son of Dr. John Moore (1729-1802), author of Zeluco. Educated at Glasgow High School, he entered the 51st Foot in 1776, and served in America during the War of Independence. In 1794 he was in Corsica, after which he went on an expedition to Santa Lucia. He served against the Irish rebels in 1798, in the Netherlands in 1799, and in Egypt in 1802, by which time his reputation as a soldier stood very high.

Having been knighted, he was, in 1803, chosen to command the troops at Shorncliffe, and it was there that he trained the regiments, among them the 43rd and 52nd, of the light division.



*John Moore*  
After Lawrence

In 1806 Moore was sent to the Mediterranean, and in 1808 he led a division on an abortive attempt to assist Sweden. Returning therefrom he was ordered to Portugal, and was soon in command of the British troops there. Events made it necessary for him to fall back to Corunna, where his men turned and fought the French, Jan. 16, 1809. Moore was mortally wounded and died on the 17th. The circumstances of his burial are known through Rev. C. Wolfe's poem. For six years, 1784-90, Moore was a Scottish M.P. He enjoyed the friendship of Pitt and the duke of York, who, like others in authority, thought highly of his soldierly qualities. *See* Corunna illus. p. 2392; *Peninsular War*; *consult* Lives, J. C. Moore, 1834; J. F. Maurice, 1897; *Diary*, ed. J. F. Maurice, 1904.

**MOORE, MARY** (1861-1931). British actress. Born in London, she made her stage début in 1885. After the death of her first husband James Albery (*q.v.*) in 1889, she appeared under the management of Charles Wyndham, in whose productions she played the lead. Her earliest success was in the rôle of Ada Ingot in David Garrick, and she later appeared in plays by H. A. Jones and H. H. Davies. She married Wyndham in 1916, and was joint proprietor with him of the Wyndham's and New Theatres. She died April 6, 1931.



Mary Moore,  
British actress  
Claude Harris

**MOORE, THOMAS** (1779-1852). Irish poet and biographer. Born in Dublin, May 28, 1779, the son of a grocer, he was educated at Trinity College, and came to London in 1799. In London, as elsewhere, his engaging personality and unusual gifts quickly procured for him a large circle of distinguished friends.

A volume entitled *Poetical Works of the Late Thomas Little* appeared in 1801. In 1803 he was appointed registrar of the Admiralty Court, Bermuda, but returned to England after a year, leaving a deputy.

In 1806 appeared his *Odes and Epistles*, which included the Canadian Boat Song. A scathing criticism in *The Edinburgh Review* led to an abortive duel with Jeffrey (*q.v.*), after which the two combatants became firm friends. In 1807 the publication began of the



*Thomas Moore*  
After Lawrence  
(courtesy of  
Mr. John Murray)

*Irish Melodies*, with music by Sir John Stevenson, upon which Moore's fame largely rests. Like all his poetry, they are tuneful, graceful, but often artificial and without depth. The *Melodies* brought a fixed income of £500 a year, the brilliant and enormously successful Eastern poem *Lalla Rookh* (*q.v.*), 1817, brought £3,000, and Moore enjoyed a vogue second only to that of Byron. But the default of Moore's deputy in Bermuda for £8,000 brought financial disaster, and Moore was compelled to seek refuge in Paris till 1822. He returned to London, and at his country house, Sloperton Cottage in Wiltshire, spent the remainder of his life. In 1811 he married Bessie Dyke (d. 1865), an actress.

The great work of the latter part of Moore's life is his biography of Byron, 1830, which, though deficient on the critical side, remains the standard authority. He also issued an edition of Byron's works, and wrote biographies of Sheridan, 1825; and Lord Edward FitzGerald, 1831. He received a literary pension of £300 in 1835, and a civil list pension in 1850. He died Feb. 25, 1852.

**MOORE, THOMAS STURGE** (1870-1944). British poet and artist. He was born Mar. 4, 1870, and educated at Dulwich. He became a pupil of Charles Ricketts (of whom he later wrote a short biography) and was a distinguished wood engraver. His first volume,



T. Sturge Moore,  
British poet and artist

*The Vinedresser and Other Poems*, appeared in 1899, and he published his *Collected Poems* in 1932. His prose works included *Art and Life*, 1910; and *Armour for Aphrodite*, 1929. He died July 18, 1944.

**Moorfields**. London thoroughfare. Between Finsbury Pavement and Moor Lane, E.C., it opens N. out of Fore Street. Its name is all that is left of an area once fenland, and more recently known as Finsbury Fields. First drained in 1511, laid out into walks 1606, it was built over in the 18th and early 19th centuries. Bethlem hospital, formerly a convent, stood here from 1676 until its removal in 1815 to St. George's Fields, Lambeth. The old fields are covered by Finsbury Circus and Square. Near by is the well-known Moorfields eye hospital.

**Moorgate**. London thoroughfare. Running N. from Lothbury to London Wall and Finsbury Pavement, it was named from a postern gate in the old city wall which opened into Moorfields. The gate was set up in 1415, rebuilt in 1472, and taken down in 1762. In 1922 Moorgate Street with Finsbury Pavement became Moorgate. It was comparatively untouched by the bombing of the Second Great War. *See* Finsbury.

**Moor Hen**. Alternative name for the Water Hen (*q.v.*).

**Moorings**. Arrangement of chains, anchors, or heavy iron blocks, and buoys, to which ships can make fast. They are laid permanently in a harbour. Vessels lying alongside a jetty are said to be moored there. Moorings for airships take the form of a lofty lattice mast of steel, to the top of which the airship is fastened by the nose, swinging in any direction with the wind. A lift running inside the mast carries passengers, crew, and cargo from the ground to the airship, while pipes carry supplies of water, gas, and engine fuel. One of the largest airship mooring masts was erected at Cardington, Beds.

**Moorish Architecture**. Term commonly applied to the Hispano-Moresque style developed by the Moorish conquerors of Spain, and illustrated in such buildings as the mosque of Córdoba and the Alhambra at Granada. It formed a distinctive phase of Mahomedan architecture (*q.v.*). *See* Arch.

**Moor Park**. Name of two English parks. One is 1 m. E. of Rickmansworth, Herts, and was enclosed about 1460. The mansion was built in 1673, and reconstructed in 1720. The park was bought by Lord Leverhulme, 1919,



and turned into a residential district. It has a famous golf course. Moor Park is a station on the Met. rly.

The house and land on the banks of the Wey 2 m. E. of Farnham, Surrey, was formerly known as Compton Hall, its name being altered to Moor Park, after the place in Herts, when it was bought by Sir William Temple about 1682. Here Swift, when Sir William's secretary, wrote *The Battle of the Books* and *Tale of a Tub*, and first met Esther Johnson (Stella). The place is also associated with Dorothy Osborne.

**Moors.** Name in popular usage for the Muslim population of mixed Berber and Arab descent in N.W. Africa. The Mauri of the Mauretanian kingdom of Roman writers were Berbers. The Arab irruption of the 8th century which led to the invasion of Spain resulted in some racial blending, and the subsequent return to Morocco of Hispanified Saracens (Moriscos) brought in an Andalusian element. The Arabic-speaking Moor is thus the resultant of many forces, social and ethnic. The name was extended by early Portuguese adventurers to the Arabian settlers in India and Ceylon. See Morocco; Spain.

**Moose** (*Alces Americana*). Largest living member of the deer family, distinguished by its size, long pendant muzzle, and broadly palmated antlers. It occurs under the name of elk in Europe; but the name moose is restricted to the American species, which occurs in Canada and in the U.S.A. from Maine to N. Dakota. Alaska is now its chief home; incessant hunting has made it rare in the less remote forests of N. America. A fine male stands nearly 7 ft. high, and weighs over 1,000 lb. It keeps to the more secluded parts of the forest regions.

In the summer it visits the swampy ground near lakes, but in winter resorts to the higher ground. Here it is usually found in families, consisting of the male and female and the young of the past two seasons; and a "yard" is formed by treading down the deep snow. In the mating season the males are highly dangerous, fight furiously, and are often lured to destruction by hunters who imitate the cry of

the cow moose. Notwithstanding its great size and clumsy appearance, the moose travels at great speed and with curious noiselessness through the densest forests. It is mainly hunted for sport, but its flesh makes good venison, and its hide is converted into leather. See Deer; Elk; Ice Age.

**Moosehead.** Lake of Maine, U.S.A. The most extensive lake in New England, lying on the borders of Piscataquis and Somerset cos., it measures 35 m. by 12 m. at extremes, and covers about 120 sq. m. The Kennebec issues from its W. side. The lake lies at an alt. of 1,000 ft., abounds in fish, and is the gateway to wild country frequented by sportsmen.

**Moose Jaw.** City of Saskatchewan, Canada. It stands on Moose Jaw river, 398 m. W. of Winnipeg and 420 m. E. of Calgary, and is a divisional point on the C.P.R., served also by C.N.R. and Soo Line. An agricultural centre, it has the biggest stockyards W. of Winnipeg. Pop. 22,599.

**Moot.** Literally a meeting, the word being akin to meet. It was used among the Anglo-Saxons for meetings of freemen, and so we hear of folkmoths, shiremoths, and the like, while Witanagemot is another compound. It survives in English in the moot hall. Law students at the Inns of Court call their legal debates moots. See Folkmoot; Witanagemot.

**Mop Fair.** Statute fair formerly held in England at which farmers engaged servants and labourers.

The name was derived from the circumstance that servants carried a mop as an indication that they were waiting to be hired. Carters fastened to their hats a piece of whipcord, shepherds a tuft of wool, groomers a sponge, and so on. Sometimes a second fair was held soon after the

statute fair for the benefit of those persons not already engaged. Engagements made at a mop fair were for one year, but with the growing practice of hiring for shorter periods, mop fairs degenerated into pleasure fairs.

**Moplahs.** A people partly of Arab origin mainly living in Malabar. Tradition has it that the Moplahs, whose local name is

Mappilla, are descended from the union of Malabar women with Arab traders, who arrived on the Malabar coast in the 3rd century. As the fathers usually returned to Arabia, the custom grew up of giving the children the names of their mothers; hence the word "Mappilla," and matriarchal customs survived. By religion the Moplahs are fervent Muslims and their fanaticism has on occasion burst out in violence. The last serious outbreak was in 1922 and was suppressed only after serious fighting involving heavy casualties. An attempt was made to enlist Moplahs into the Indian Army, and in 1897 a battalion was raised. The experiment proved a failure and the battalion was disbanded. The number of Moplahs is estimated at 1,500,000.

**Mopsus.** In Greek legend, the name of two famous soothsayers: (1) The son of Manto, the daughter of Tiresias (q.v.) and Apollo. Having built the city of Mallos in Cilicia, together with Amphilocheus, the son of Amphiarus, a quarrel arose concerning the possession of it, in which both were slain. Mopsus had oracles at Colophon and Mallos, and Mopsuestia is named after him. (2) One of the Lapithae. Son of Apollo and one of the nymphs, he took part in the voyage of the Argonauts, for whom he acted as seer. He died during the journey from the bite of a snake in Libya.

**Moquegua.** Maritime prov. of S. Peru. It is bounded S. by Tacna and W. by the Pacific. Traversed by the Andes, whose slopes are fertile and well populated, it produces copper, silver, coal, marble, sulphur, etc.; the vine is widely cultivated. Its area is 5,549 sq. m. Pop. 34,152.

Moquegua, the capital of the prov., is 68 m. by rly. N.E. of the port of Punta Coles on the Pacific, which is connected by rly.

**Mora** (Lat., delay). Term in Scots law for delay in pursuit of a legal remedy disentitling a person to relief by the courts. See Laches; Limitations.

**Morá** (*Dimorphandra mora*). Forest tree of the family Leguminosae, native of British Guiana and Trinidad. It attains a height of 150-200 ft.; its leaves are divided into two rows of leaflets, and the small flowers are combined in dense spikes. The large, woody pods each contain a kidney-shaped seed. The timber is of great value to the shipbuilder, being hard, tough, and close grained like oak, with no tendency to splintering.



Moose. Specimen of the great Alaskan moose  
Amer. Mus. Nat. Hist.

**Moraceae.** Botanical term for the mulberry family, often included in Urticaceae (*q.v.*). See Mulberry.

**Moradabad.** Dist. and town of India in the Rohilkhand division, Uttar union. The dist. is situated on the plains E. of the Ganges. The chief crops are wheat and millet. The town is on the Ramganga, and has small manufactures in brass and tin. Area, 2,288 sq. m. Pop. dist., 1,473,151; town, 142,414.

**Moraine** (French). Rock waste accumulated on the surface of a glacier or ice sheet. Lateral moraines are found each side of a glacier, and are formed from the detritus which falls down the valley sides. The uniting of two tributary glaciers produces a medial moraine. Beneath the glacier or ice sheet is the ground moraine or *moraine profonde*. Material transported by the glacier and deposited at its snout by the melting of the ice forms a crescentic terminal moraine. See Glacier.

**Morality** OR **MORAL PLAY.** Early form of the drama, which most probably developed out of the earlier mystery and miracle plays. It is believed to have grown into popularity in the first half of the 15th century. The morality differed from the miracle play in that it was not concerned with the presenting of an established Biblical story with named characters, but was rather a play enforcing a moral truth or lesson by means of personified abstractions. The fact that such personifications appeared in some of the miracle plays suggests that in them may be found the origin of the moralities. Everyman, which allegorises man's life and death, Mankind, Youth, Lusty Juvenuts, Nature of the Four Elements, Hickscorner, and Magnificence, by John Skelton, are notable examples. See Drama.

**Bibliography.** The Medieval Stage, E. K. Chambers, 1903; English Miracle Plays, Moralities and Interludes, A. W. Pollard, 4th ed. 1914; English Miracle Plays and Moralities, E. H. Moore, 1907.

**Moral Rearmament.** Name given by Frank N. D. Buchman (*q.v.*) to the religious campaign inaugurated by him in East Ham town hall, June, 1938. World Assemblies for Moral Rearmament were held at Interlaken, 1938, and Monterey, California, 1939. The movement attracted great attention and numbered several popular figures among its converts; but it was rather discredited when some of its prominent followers declared themselves conscientious objectors to war, a doctrine which in view of the threat from

Germany at that time was unpopular among the masses. Dr. Buchman's book, *Moral Rearmament*, was published in 1938; but the campaign died down when he returned to America in 1939. See Oxford Group.

**Morand, PAUL** (b. 1889). A French diplomat and writer. Born in Paris, March 13, 1889, he was educated at the Sorbonne and Oxford university. Entering the French diplomatic service, he was secretary to the French embassy in London, 1913-16, and later held similar posts in Rome and Madrid. He was appointed French chargé d'affaires in Siam, 1925. Liaison officer between the British ministry of economic warfare and the French ministry of blockade, 1939-40, he became ambassador at Berne, 1944.

In 1921 he published his first novel, *Green Shoots*, but it was with the publication of *Ouvert la Nuit* (1922) and *Ferme la Nuit* (1923), both of which were translated into English, that he established a reputation as a graphic delineator of the sophisticated society of urban Europe after the First Great War. His principal characters were women, and his style, considerably influenced by the more tinsel side of the cinema, captured to a remarkable degree the after-the-war abandon of the 1920s. His next book, *L'Europe Galante*, is a daring series of stories about women, while *Budha Vivant* (1926) was a not very successful attempt to probe the soul of Asia. Among his later novels were *Black Magic*, 1927; *Flûte d'Orient*, 1931; *A Frenchman's London*, 1933; and *Les Extravagants*, 1937. He also wrote a considerable amount of free verse, and in 1942 published a life of de Maupassant.

**Morane-Saulnier.** Firm of French aircraft designers and manufacturers with works at Puteaux and Ossun. Formed in 1911, the company built some of the most successful monoplane fighters used by the French and British in the First Great War. In the latter stages of the war, the company developed small, high-speed fighter biplanes, similar to the Fokker fighter used by the German air force. Between the wars Morane-Saulnier concentrated upon single-seater fighters, and the M.S. 406, which was the standard fighter in l'Armée de l'Air in 1939, was in action up to the fall of France in 1940. During the occupation the Morane-Saulnier factory was compelled to work for the Germans and

produced for the Luftwaffe the Fieseler Storch army cooperation monoplane. After the war the company specialised in fighters, trainers, and light civil aeroplanes.

**Morant, SIR ROBERT LAURIE** (1863-1920). British civil servant. He was born April 7, 1863, and educated at Winchester and New College, Oxford. He became tutor to the royal family of Siam, and was given the task of reorganizing the national system of education. Returning to England, he joined the board of education as examiner in 1894. In 1895 he was made assistant director of special inquiries and reports, and he made his reputation by framing the Education Act of 1902. Permanent secretary of the board of education, 1903-11, and knighted in 1907, Morant was selected by Lloyd George in 1911 as first chairman of the health insurance commission, and was made secretary of the ministry of health in 1919. He died on March 13, 1920.

**Morar.** Loch or lake of Inverness-shire, Scotland. It is 12 m. long, with an extreme breadth of 2 m. In the very W. of the county, its waters are carried to the sea by a short stream. The district around is known as Morar.

**Morat** (Ger. *Murten*). Town of Switzerland, in the canton of Fribourg. It stands on the S.E. side of the lake of Morat, 18 m. by rly. W. of Berne, and is connected by steamboat and rly. with Neuchâtel. Its old town gate and walls are well preserved, and in its town hall is a unique collection of Burgundian weapons. Its 13th century castle, with a garrison of 1,500 men, resisted the artillery of Charles the Bold for 10 days before the battle of Morat, June 22, 1476, when Charles sustained a disastrous defeat. Morat was taken from Savoy by the Swiss in 1475, and annexed to Fribourg in 1814. The lake has an area of 10½ sq. m., and is connected by the Broye with that of Neuchâtel. On its banks prehistoric dwellings have been found. Morat is the only German-speaking and Protestant town in Fribourg. Pop. 3,000.

**Moratalla.** Town of Spain, in the prov. of Murcia. It stands on an affluent of the river Segura, 40 m. N.W. of Murcia, and 6 m. E. of Calasparra station. Wine and oil are produced, and a coarse kind of cloth, soap, and alcohol manufactured. Pop. 13,400.

**Moratorium** (Lat. *mora*, delay). Literally, postponement, a period in which no business engagements can be completed, or debts or

other liabilities enforced. In times when a financial panic is feared, a government will sometimes declare a moratorium for a certain number of days, thus giving public confidence a chance to recover. On the outbreak of the First Great War a royal proclamation declared a moratorium of a month in Great Britain for all bills of exchange. On the outbreak of the Second Great War, the Courts (Emergency Powers) Act prevented the recovery of most debts without the leave of the court.

**Morava.** River of Moravia, also known as the March (*q.v.*).

**Morava.** River of Yugoslavia. It is formed by the junction of the southern Morava and the western Morava, which occurs near Krushevatz. The S. Morava rises in the height of land stretching E. from the Kara Dag, above Üsküb, partly in Serbia and partly in Bulgaria, from the other side of which flows the Vardar, and its course is N. to its junction with the W. Morava, which rises in the Gotija range, S. of Ushitë. The combined rivers, known as the Morava, wind N., and fall into the Danube, after a course of about 250 m., near Semendria. The Morava and the Vardar form a great natural sunken corridor in the Balkans from Belgrade to Salonica.

**Moravia.** Central portion of the republic of Czecho-Slovakia, formerly the Austrian prov. of Mähren in Austria-Hungary.

Physically it is separated from the rest of the republic and is almost wholly the basin of the March or Morava, sloping S. towards the basin of Vienna from the Sudetes on the N.W., except in the N.E., where the Moravian Gate, between the Sudetes and the Carpathians, leads N. to Silesia and Galicia. The Thaya valley is roughly the S. boundary, separating Moravia from Slovakia. The height of land between Moravia and Bohemia averages 1,500 to 2,000 ft., with passes near Jihlava and Zwittau. The March is the chief river, for the Oder and the Vistula merely begin within the province; its main affluent is the Thaya, which is fed by the Jihlava, Svitava, and Suratka.

A quarter of the country is forested, chiefly with pines and oaks. Rather more than half is cultivated, and, the soil being fer-

tile, Moravia was in many respects the most productive agricultural province of the Dual Monarchy of Austria-Hungary. In the S., maize, fruit, and vines; in the centre, wheat, barley, and sugar beet; and in the N., rye, oats, flax, and potatoes are the staple farm products. Cattle are numerous, especially in the Moravian Gate; horses thrive in the centre; goats and merino sheep are numerous. Coal is mined on the Silesian border, W. of Brno; iron ore is mined in the Sudetes. Brno is the capital; other towns being Ost-rava, Olomone, Jihlava, and Pre-rov. The rly. system partially centres on Brno, but in the S.W. and on the E., main lines from Prague and Silesia respectively run to Vienna without touching Brno; the main line between Brno and Prague is not direct, but is diverted to the N.

Before the advent of the Magyar hordes in central Europe, Moravia was inhabited by Slavs. In the 9th century the people became Christians, at the instance of the Greek missionaries, Cyril and Methodius. Moravia was held by the Czech rulers of Bohemia during the 10th century, and Ottakar II, 1253-78, who had governed Moravia during his father's lifetime, extended the Czech power to the Adriatic. King Matthias of Hungary also ruled over Moravia and Silesia, and was succeeded by Vladislav of Poland, who had been elected to the throne of Bohemia in 1471. After the fateful fight at Mohacs, the Hapsburgs came to power; in 1612 Matthias, who had ruled Moravia for four years, became king of Bohemia, and Moravia became part of the empire definitely under Hapsburg control. In 1849 Moravia was made a separate prov. of Austria. From 1918 its history belongs to that of Czecho-Slovakia, of which it ceased to be an administrative unit in 1948.

**Moravians** OR **MORAVIAN BRETHREN.** Protestant sect, also known as the Unitas Fratrum or Bohemian Brethren. Descent is claimed from a division of the Hussites at Prague about 1450, which secured episcopacy from a Waldensian bishop in Austria in 1467, but endured much persecution, especially in Bohemia. In 1722 a few families fled from Moravia to Saxony under the leadership of a carpenter named Christian David, and united with a Lutheran community founded by Count Zinzendorf (1700-60) at Berthelsdorf. The community was originally called Bethel and

later Herrnhut (Watch of the Lord); it definitely separated from Lutheranism in 1727, when the title Moravian Brethren was revived. Elders were now elected and one was consecrated bishop.

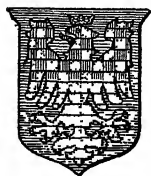
Zinzendorf was banished from Saxony in 1736 on a charge of political intrigue, and spent the rest of his life travelling about Europe and establishing branches of the sect. He visited England in 1737, and for a time had influence with the Wesleys. In 1749 he purchased Lindsey Place, Chelsea, and secured a lease of the site of Beaufort House. The stables were turned into a chapel, and the other premises into a residence for the families connected with it. Later used as an orphanage, it was sold in 1770. An Act of parliament (22 Geo. II c. 30) was secured by Zinzendorf to exempt Moravians from military service, and Bishop Wilson of Sodor and Man undertook a general supervision of the community. A chapel was opened in Fetter Lane, London, and several branches, among them the community at Fulneck, near Leeds, were formed.

The sect is said to number about 100,000 adherents; it had in 1948 in the U.K. 42 congregations and preaching stations with 3,043 communicants. Organized in four provinces in Great Britain, N. America, S. America, and Germany, it is famed for its missionary zeal, having sent out over 2,000 missionaries to the heathen. Its theological position is practically that of Evangelical Lutherans.

**Moray.** One of the ancient provinces of Scotland. It included roughly the modern counties of Moray, Nairn, and Banff, and part of Inverness.

**Moray** OR **MURRAY, EARL OF.** Scottish title borne since 1561 by the family of Stewart. Moray was the name of one of the seven old Scottish earldoms, held early in the 14th century by Sir Thomas Randolph, a kinsman of Robert Bruce. After the death of the 3rd Randolph earl in 1346, it was held by Henry, duke of Lancaster, and then by several members of the Dunbar family. No family held it very long until it came to the Stuarts.

The best known of all earls of Moray was James Stewart (*v.i.*). The title passed to his daughter's husband, James Stuart, and to his descendants in turn until the present day. Alexander, 5th earl (d. 1700), was secretary of state in Scotland before the Revolution of 1689. Francis, 9th earl, was



Moravia arms

made a British peer as Baron Stuart in 1796. Archibald, 19th earl (b. Nov. 14, 1894), succeeded his brother in 1943. The eldest son is known as Viscount Doune. *Pron.* Murry.

**Moray, James Stewart, 1st Earl of** (c. 1530-70). Scottish noble. An illegitimate son of James V, his mother was Margaret



Earl of Moray,  
Scottish noble

Erskine. He was sent to the university of St. Andrews, and was soon heard of as leading a force that repelled a small French invasion of Fife. He became prominent in Scotland soon after the accession of his half-sister Mary to the throne. A supporter of the reformed teaching, he joined the lords of the congregation in opposing the queen mother, and, having got military aid from England, brought about the treaty of Edinburgh and the departure of the queen's French auxiliaries. For a time after Mary returned from France in 1561, Moray had great influence with her, but a breach soon came, its immediate cause being her marriage with Darnley. Moray was exiled, and was still away when on Mary's abdication in 1567 he was chosen regent. He was responsible for her defeat at Langside, and he ruled the country, on the whole successfully, until shot as he rode through Linlithgow, Jan. 21, 1570, by James Hamilton of Bothwellhaugh. He was buried in St. Giles's, Edinburgh.

Moray married a Keith, daughter of the 1st Earl Marischal, and left two daughters. His character has been fiercely attacked, especially his conduct towards Mary, but there is no reason to believe that he was more treacherous, avaricious, or hypocritical than other nobles of his times. *See* Mary Queen of Scots.

**Moray Firth.** Arm of the North Sea on the N.E. coast of Scotland. It extends inland for nearly 40 m. and has a breadth from Tarbat Ness to Burghhead of 16 m., but is sometimes said to embrace the whole extent of water between Duncansby Head, in Caithness, to Kinnairds Head in Aberdeenshire.

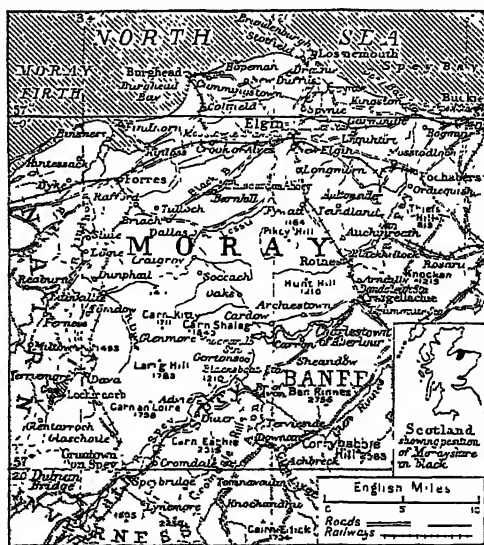
**Morayshire.** Maritime co. of Scotland, also known as Elginshire. Its area is 476½ sq. m., and it has a coast-line of 33 m. on the Moray Firth. The co. is moun-

tainous in the S., where are the Cromdale Hills, with heights exceeding 2,000 ft., but it becomes less so as the low district along the coast is approached. Among rivers are the Spey, Findhorn, Lossie, and Divie. There are several small lakes; Lochindorb is the largest; Spynie, having been drained, is but a fraction of its former size. Wheat, oats, and potatoes are grown; cattle, horses, and pigs are reared, and there are valuable fisheries. The co. is served by rly.

The chief places are Elgin, the co. town, Lossiemouth, Forres, Rothes, Burghhead, Fochabers, and Grantown-on-Spey. The Culbin Sands were deposited by a storm c. 1694; in 1829 the lower parts of the co. were visited by devastating floods. The chief antiquities are ecclesiastical remains at Elgin, Plusscarden, and Kinloss; ruined castles at Spynie, Lochindorb, and New Duffus; and Sweno's Stone at Forres. The co., whose name was changed from Elgin to Moray in 1920, unites with Nairnshire to elect an M.P. Pop. est. 44,100.

**Morbihan.** Dept. of France, part of the old prov. of Brittany. With an area of 2,738 sq. m. it has an irregular and indented seaboard on the Atlantic and is contiguous with the depts. of Finistère, Côtes-du-Nord, Ille-et-Vilaine, and Loire-Inférieure. Except for the Montagnes Noires on its N. boundary, there are few hills; the Landes de Lanvaux form a barren plateau some 30 m. long, running E. and W. The land-locked gulf of Morbihan and Quiberon Bay, with the Vilaine estuary, are features of the coast; Belle-Île and Groix are the chief islands. Vannes is the capital, other towns being Lorient, Ploërmel, Pontivy, Quiberon, and Hennebont. Pop. 506,884.

**Mordant.** Substance used to fix the colour in dyed textiles by the formation of an insoluble coloured compound in the fibres. The process has been used since early times, the most important mordant being madder, of which the colouring principle is alizarine. With



Morayshire. Map of the maritime county on the east coast of Scotland also called Elginshire

certain metals, notably aluminium (red), iron (violet), and chromium (maroon), insoluble compounds fast to light are formed. The discovery by Nicholson in 1862 that insoluble dyes can be converted to soluble compounds by sulphonation greatly increased the range of colours which could be produced by mordants. In wool dyeing, the usual process is to dye the fibre and develop the insoluble compound by treatment with the mordant. Other basic mordants are aluminium salts, especially the sulphate, alum, and tartarate, while iron, tin, and chromium salts are also used. Basic dyes require acid mordants, chiefly tannic acid and antimony tannate. This class of mordant is used mainly for silk and cotton goods; the cotton is first treated with solution and then dyed. Complex phospho-tungsten-molybdenum compounds as mordants give exceptionally fast dyes.

**Mordecai.** Character in the O.T. book of Esther. Esther was his cousin and adopted daughter. *See* Esther; Haman.

**Morden.** Part of the urban dist. of Merton and Morden (*q.v.*).

**Morden College.** House near Blackheath, London, built by Wren for Sir John Morden, now a home of rest for aged merchants in distressed circumstances.

**Mordovsk.** Autonomous republic of the R.S.F.S.R. It lies E. of Moscow region, and is connected with the capital by rly. The river Moksha flows through its W. districts. Formerly an agricultural

region, it is now industrialised. The chief towns are Saransk, the capital, and Krasnoslobodsk.

**Mordred**, or **MODRED**, **SIR**. One of the Knights of the Round Table in the Arthurian legends. In Arthur's absence Mordred has usurped the kingdom, and in the last great battle he is slain by Arthur at the very moment that he gives the king his deathblow. In some versions of the Legend he is the lover of Queen Guinevere. See *Morte d'Arthur*.

**Mordvin**. People of Finnic stock, mostly in the middle Volga region of Russia. Numbering about 1,000,000, apart from a few in Siberia and central Asia, they comprise in the S. the dark Moksha, in the N. the blond Erzya. They are settled husbandmen and wood-workers. Their Finno-Ugric speech is disappearing, but nature-worship survives under a veneer of Christianity. See *Finland*.

**Møre**. Fylke or co. of Norway, sometimes known as Romsdal. It is situated between the Dovrefjeld and the Atlantic, and has a long coastline indented by many fjords, of which the Romsdal, Halse, and Harø are the largest. Most of the area is part of the plateau above 3,000 ft. alt. The chief towns are Kristiansund, Aalesund, and Molde. Fishing is the principal industry. The area is 5,812 sq. m. Pop. 181,089.

**More**, **SIR ANTHONY** (c. 1512-c. 1576). Dutch portrait painter. Anthonis Mor, also called Antonio



Sir Anthony More,  
Dutch painter

Moro, was born at Utrecht, was a pupil of Jan van Scorel, and was influenced by Joost van Cleef. He was admitted to the guild of Utrecht

1547, and went to Brussels, Rome, and in 1552 to Spain, where he became court painter to Philip II. In England, 1553-54, he painted a portrait of Queen Mary and was knighted, but he returned to the Netherlands and was patronised by Alva. He died at Antwerp. His chief works are Five Members of the Order of S. John of Jerusalem, 1541; Two Canons of Utrecht, 1544; Philip II and Mary of Parma; Sir T. Gresham, in the National Portrait Gallery.

**More**, **HANNAH** (1745-1833). British author. Born Feb. 2, 1745, at Stapleton, Glos, she was the daughter of a schoolmaster and

a precocious child. Her first considerable work was a pastoral drama, *The Search after Happiness*, 1762. Coming to London in 1774, she became intimate with Garrick. Johnson, Burke, and other literary lights. Garrick produced



two of her tragedies, *Percy*, 1777 and *The Fatal Falsehood*, 1779. She spent her later years in retirement at Cowslip Green, near Bristol, where she wrote *On Female Education*, 1799; and a novel, *Coelebs in Search of a Wife*, 1809. Famous for charitable activities, she died Sept. 7, 1833. Her life was written by H. Thompson, 1838; A. M. B. Meakin, 1911; and some of her letters were ed. by R. B. Johnson, 1925.

**More**, **SIR THOMAS** (1478-1535). English statesman, author, and saint. He was born in Milk Street, Cheapside, Feb. 7, 1478. His father, John More, became a knight and a justice of the king's bench. His mother was Agnes, daughter of Thomas Graunger. From S. Anthony's grammar school in Threadneedle Street he was admitted, about 1489, into the household of Cardinal Morton. In 1492-94 he was at Oxford, where, a pupil of Grocyn and Linacre, filled with enthusiasm for the new learning, he studied Greek, Latin, French, theology, and music, and began his lifelong friendship with John Colet. In London began his friendship with Erasmus, and in 1501 he was called to the bar.

More lectured on S. Augustine's *De Civitate Dei* at S. Lawrence's, Old Jewry, was for three years reader at Furnival's Inn, and with a view to holy orders placed himself under the direction of the brothers of the Charterhouse. He secretly wore a hair shirt, fasted much, and each day heard Mass, but gave up the idea of the priesthood in 1503. He became M.P. in Jan., 1504, and, continuing his close study of the new learning, was especially influenced by the *Life and Writings of Pico della Mirandola*, a translation of which from the original Latin he published in 1510. He visited Louvain and Paris in 1508, and became bencher of Lincoln's Inn, 1509, and reader, 1511 and 1516. Under-sheriff of London, 1510, while an envoy in Flanders, 1515, he planned his fascinating *Utopia*, 1516.

Regarded with apparent high favour by Henry VIII, he was appointed speaker of the house of commons, 1523, and staunchly defended the privileges of the house against Wolsey, whom he succeeded as lord chancellor in 1529. An ardent reformer of the school of Erasmus, he took alarm at the course which the Reformation was taking in England. Conscience compelled him to resign the chancellorship in 1532, when Henry claimed to be the one supreme head of the Church of England. Though willing to swear political fidelity to the king, he refused in 1534 to take any oath that should impugn the spiritual authority of the pope. Committed to the Tower, April 17, 1534, and indicted for



Tho. More Esq (Tho. More Kt)  
After Holbein

high treason in Westminster Hall, July 1, 1535, he was executed on July 6, 1535, the king changing the sentence from hanging to beheading. His body was buried in the church of S. Peter ad Vincula in the Tower, and, according to tradition, reinterred in Chelsea Old Church.

More was twice married, first, in 1505, to Jane Colte, of Newhall, Essex, by whom he had three daughters (Margaret, Elizabeth, and Cicely) and one son (John), and, secondly, about 1511, to Alice Middleton, a widow. His family included also his stepdaughter Alice and an adopted daughter Margaret Giggs. His domestic life is described as his *Utopia* writ large. His house at Chelsea, built 1520, was demolished in 1740. In part of what was once the garden stands the reconstructed Crosby Hall. In addition to the *Utopia*, More is the reputed author of a *Life of Richard III*; he also wrote a tractate on *The Four Last*



Things, and in the Tower his Dialogue of Comfort. *See* Utopia.

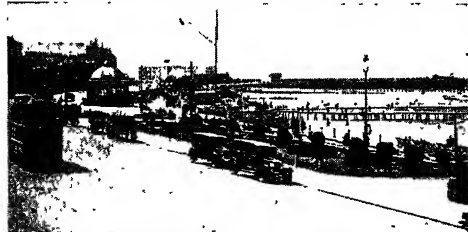
In 1935 More, with John Fisher, was canonised *per via straordinaria*; i.e., he was made a saint in view of his martyrdom, although he had not performed the two miracles generally held necessary for canonisation. The gesture marked the pope's interest in England and his pleasure at the large number of English pilgrims who had visited Rome during the Holy Year. The ceremony was performed on May 19, 1935, in the presence of some of More's descendants and 8,000 British pilgrims led by the R.C. archbishop of Westminster. More was the first British saint since the Reformation. His festival is July 6.

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**Morea**, THE (perhaps from Slav. *more*, the sea, or Gr. *moron*, mulberry, from its resemblance in shape to a mulberry leaf). Medieval and modern name for the Peloponnesus, a term by which it has been largely replaced since the liberation of Greece from Turkish rule. *See* Greece; Peloponnese.

**Moréas**, JEAN (1856-1910). Greek-born French poet. Born at Athens, April 15, 1856, he became a leader of the Symbolist school of poetry in France. His early works included *Les Cantilènes*, 1886, and *Le Pèlerin Passionné*, 1891. Later he adopted a classic severity of style in such volumes as *Poésies*, 1898; *Contes de la Vieille France*, 1903; and in his verse-drama, *Iphigénie à Aulis*, 1905, strongly reminiscent of Euripides. He died March 31, 1910.

**Moreau**, GUSTAVE (1826-98). French painter. Born at Paris, April 6, 1826, he studied at the *École des Beaux-Arts*, and exhibited at the Salon, 1852. The Athenians and the Minotaur was exhibited, 1855, and Oedipus and the Sphinx at the Salon, 1864.



Morecambe and Heysham. Part of the promenade of this popular Lancashire holiday resort

Other important works are: Orpheus, Jason, Golgotha (all in the Luxembourg), Diomed, 1866, Salomé, and Helène, 1880. He died April 18, 1898.

**Moreau**, JEAN VICTOR MARIE (1763-1813). French soldier. Born Aug. 11, 1763, at Morlaix, the son



J. V. M. Moreau, French soldier

of a lawyer, he was educated for the law at Rennes, where he made himself notorious by his leadership of the students in their disorders. In 1790 he joined the revolutionary army, and, coming early to the front, was, in 1793, made a general. He commanded a division in Flanders, after which he led an army into Germany. After some successes he was compelled to retreat, this able performance, however, adding to his reputation. In 1797, suspected as a traitor, he lost his command but in 1799 he was given a high position with the army in Italy, where he led another masterly retreat.

In 1800 Moreau assisted Bonaparte to overthrow the Directory. He then led an army against the Austrians, ending a successful campaign with the victory at Hohenlinden (*q.v.*), Dec. 3. Partly because of his republican views, he fell under his master's displeasure. He was tried and, although the charge was not proved, was banished for complicity in a plot against Napoleon, and spent the next few years in America, where he married a Creole. In 1812 he joined the Allied service, and was mortally wounded at the battle of Dresden, Aug. 27, 1813. He died on September 2.

**Morecambe and Heysham**. Seaport, watering place, and mun. bor. of Lancashire. It stands on Morecambe Bay, 5 m. from Lancaster. Heysham harbour, completed 1904 and covering 300 acres, is a British Rlys. (formerly L.M.S. Rly.) passenger and goods seaport to and from N. Ireland, with additional services to the Isle of Man. S. Peter's church in the old village of Heysham is mainly Norman. Morecambe, to the immediate N., is a large holiday resort with a great range of popular enter-

tainments. It has been called the "gateway to the Lakes." The fine promenade gives magnificent views across the bay of the mountains in the Lake District, but except at high tide there is little sea. During the Second Great War there was an important R.A.F. training centre here. Pop. 42,000.



Morecambe and Heysham arms

**Morecambe Bay**. Extensive inlet on the coast of Lancashire and Westmorland, England. It extends 17 m. inland to the mouth of the river Kent, and measures 10 m. in breadth from the S.E. point of Walney Island to Fleetwood. Besides the Kent, the Lune, Wyre, and several smaller rivers empty into Morecambe Bay. At high tide a bore runs up the river estuaries; at low water much of the area is bare sand, the rivers forming narrow impermanent channels.

**Moree**. Municipality of New South Wales, Australia. On the Gwydir river, it is 413 m. by rly. N.N.W. of Sydney on a branch with a railhead at Mungindi on the Queensland border. It has medicinal baths and a state experimental farm. Pop. 4,100.

**Morel** (*Morchella esculenta*). Edible fungus of the family Ascomycetes. A native of temperate



Morel. Specimens of the edible fungus

regions in both hemispheres, it has a short, white, tapering stem, and a swollen head, whose surface is broken into a network of ribs enclosing deep polygonal pits, varying in colour from yellowish, through brown, to olive. Both stem and head are hollow. Morels have been considered a delicacy since classical times, and are generally dried and used for flavouring. They seem to prefer disturbed ground and burnt areas. There are several allied species, equally good as food, one of them, Smith's Morel (*M. crassipes*, var. *Smithiana*) attaining a height of a foot, with a diameter of 7 ins. *See* Mushroom.

**Morelia.** City of Mexico. The capital of Michoacan state, it stands in a mountainous district, 6,400 ft. alt., 230 m. W. of Mexico City by rly. Its most prominent buildings are the handsome cathedral and the state-house. Chief among its educational establishments is San Nicolas de Hidalgo college, the oldest institution of the kind in Mexico. Cotton and woolen goods, sugar, cigars, cheese, and pulque are manufactured. Founded as Valladolid in 1541, Morelia became the state capital in 1582, and received its present name in 1828 in honour of Morelos, a revolutionary. Pop. 44,304.

**Morella.** Town of Spain, in the prov. of Castellón. Perched high up in the mts., 36 m. S.W. of Tortosa, it is built



Morella arms

in the form of an amphitheatre, and girdled by Moorish walls and towers. It was a medieval fortress protecting Valencia against Aragon, and has a Gothic church, founded in 1317. Blankets and sashes are made. Morella was the chief stronghold of the Carlist Cabrera, who twice defeated the forces of Queen Christina here in 1838, but it was bombarded and taken by Espartero in 1840.

**Morelos.** Small inland state of Mexico. It is situated immediately S. of the Federal dist. which surrounds the city of Mexico. In the mountainous N., the climate is cold; the S. occupies part of the slope of the Mexican plateau, and has a hot climate. The first sugarcane plantations were established here by Cortes, and the sugar industry is still predominant; rice, coffee, cereals, and fruits are grown. Silver, copper, and zinc are mined. Cuernavaca is the capital. Area 1,916 sq. m. Population 182,711.

**More Pork.** Popular name for a species of nightjar, *Podargus curvieri*. It occurs in Australia and Tasmania, and is so called from the sound of its cry. It is also called frogmouth, in allusion to its large mouth. It is dull grey in colour.

**Moresnet.** Village and dist. of Belgium. It lies on the E. frontier of the prov. of Liège, 4 m. S.W. of Aix-la-Chapelle (Aachen), and contains rich zinc deposits, under the Vieille Montagne, or Altenberg, worked by a Belgian company. During 1816-1919 Moresnet was a neutral state, until 1841 under joint Belgian and Prussian admini-

stration, thereafter under the government of its own burgomaster and council, the inhabitants making choice of Belgian or German legal rights and military service. The village of Neutral-Moresnet, or Kalmis, was the centre of the state. In 1919 Moresnet was incorporated with Belgium. Pop. 2,850. *Pron.* Mor-ay-nay.

**Moreton Bay.** Harbour of Queensland, Australia. It measures 49 m. by 17 m., and is enclosed by the narrow sandy islands of Moreton and Stradbroke. Brisbane River enters it, Brisbane being 15 m. S.W. of the bay. The neighbouring locality developed into Queensland.

**Moreton Bay Chestnut** (*Castanospermum australe*). Tall evergreen tree of the family Leguminosae, and a native of Australia. It has a smooth bark, and the large leaves are broken into two rows of pointed oblong leaflets. The flowers are at first canary-coloured, becoming a rich scarlet, and hang in loose sprays. The large, oblong, woody pods contain



Moreton Bay Chestnut. Foliage, flower, and fruit of the Australian evergreen

beans, which are said to taste, as they look, like chestnuts, hence the name. The heart-wood is dark-coloured, and is valued by cabinet-makers and turners; but it shrinks considerably in drying.

**Moretonhampstead.** Market town of Devon, England, on the edge of Dartmoor, 11 m. S.W. of Exeter, with a rly. station. A row of almshouses is notable for its stone façade fronting the main street. The 15th century church has a turreted tower with a 13th century arch looking into the nave.

Near the town is much beautiful scenery, notably along the Exeter road. Pop. 1,587.

**Moreton-in-the-Marsh.** Market town of Gloucestershire, England, 16 m. N.E. of Cheltenham. It has a broad main street and fine



Moreton-in-the-Marsh, Gloucestershire. The market hall, left, and the old tollhouse, right

17th century houses. The White Hart inn is associated with Charles I, and in the cottage hospital are preserved the chair, cushion, and footstool used by him at his trial. Moreton is a rly. junction, and the Four Shires Stone, 1½ m. outside the town, marks the meeting place of Glos, Oxon, Warwickshire, and Worcs. Pop. 1,382.

**Moretto, L.** (1498-1554). Italian painter. Born at Rovato, near Brescia, his real name was Alessandro Bonvicino, and he was a pupil of Ferramola. Influenced by Romanino, Titian, and Raphael, he painted religious pictures and some portraits. In 1521 he was engaged on frescoes with Romanino, in S. Giovanni, Brescia. His other works include Christ with His Cross, at Bergamo, 1518; The Ascension, 1526; Martinengo Cesaresco, 1526, in the National Gallery, London; Madonna with S. Cecily, 1540; Christ in the House of Levi, 1542. The master of Moroni, he was noted for technique in chiaroscuro. He died Dec. 22, 1554. Il Moretto means the blackamoor.

**Morgan, Charles Langbridge** (b. 1894). British novelist and essayist. Born Jan. 22, 1894, he entered the Royal Navy as a cadet, served in the Atlantic and on the China station, and in the First Great War; then was at Brasenose College, Oxford. He



Charles Morgan, British novelist

joined the Times in 1921, and was its dramatic critic 1926-39. His first publication was *The Gun-room*, 1919, and he made his name as a novelist with *Portrait in a Mirror*, 1929 (Femina Vie Heureuse prize). *The Fountain*, 1932 (Hawthornden prize); *Sparkenbroke*, 1936; *The Voyage*, 1940 (James Tait Black prize); *The Judge's Story*, 1947, were placed among novels for connoisseurs of style. In 1942 Morgan began a brilliant series of essays (under the title *Menander's Mirror*) in *The Times Literary Supplement*; published as *Reflections in a Mirror* and *Second Reflections in a Mirror*, these were translated into 15 languages. His play of "impersonal passion," *The Flashing Stream*, was produced at the Lyric Theatre, London, 1938. He married the novelist Hilda Vaughan in 1923.

**Morgan, GEORGE CAMPBELL** (1863-1945). An English divine. Born at Tetbury, Dec. 9, 1863, the



G. Campbell Morgan,  
British preacher  
Russell

son of a Congregational minister, he was educated at Douglas school, Cheltenham, and ordained in the Congregational Church in 1889. Asschool teacher and evangelist he acquired a profound knowledge of the Bible, which later distinguished his writing and preaching. He visited America, attracting large congregations, and held ministries at Rugeley and Birmingham. Pastor of Westminster Chapel from 1904, he resigned in 1917 on account of poor health. Back in America, he became extension lecturer of the Los Angeles Bible Institute, 1927-30. He returned to Westminster Chapel as preacher in 1933, and was minister there from 1935 to 1945, dying May 16 that year. He published an *Analysed Bible* in 10 vols.; *The Crises of Christ*; *The Bible and the Child*.

**Morgan, SIR HENRY** (c. 1635-88). Welsh buccaneer. He belonged to a Glamorganshire family, and, according to tradition, was kidnapped as a youth in Bristol and sold in Barbados. Later he got to Jamaica, joined the buccaneers, and rapidly rose to leadership. He took part in daring exploits against the Spaniards in Panama, Cuba, and elsewhere. In 1672 he was sent back

to England in disgrace, but won the favour of Charles II, was knighted, and returned to Jamaica as lieutenant-governor of Jamaica, dying there in Aug., 1688.

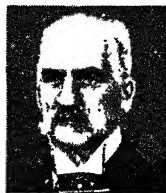


Sir Henry Morgan,  
Welsh buccaneer

*Consult* *Buccaneers of America*, A. O. Exquemeling, 1684, repr. 1891; *History of Buccaneers of America*, J. Burney new ed. 1907; *Lives*, W. A. Roberts, 1933; E. A. Cruikshank, 1935; R. Forbes, 1948.

**Morgan, JOHN PIERPONT** (1837-1913). American financier. Born at Hartford, Conn., April 17, 1837, he was educated at Boston and Göttingen. Inheriting a large fortune from his father, he joined the banking firm of Duncan Sherman in 1857, and three years later became the American agent of George Peabody and co., of London. During 1864-71 he was a partner in Dabney, Morgan and co., and then joined Drexel, Morgan—later known as J. P. Morgan and co., of New York—which henceforth was the leading financial house in America.

Under him it carried through enormous transactions, and in the U.S.A. financed great railway and shipping schemes. One of the most successful industrial enterprises created by Morgan was the U.S. Steel Corporation, or steel trust, with a capital of £220,000,000, and he was at the head of the Atlantic shipping combine. The firm restored financial stability in the U.S.A. after the panic of 1893. Morgan gave princely donations to Harvard, Yale, other educational institutions, hospitals, churches, etc. In his day he was the world's greatest art collector, and owned priceless pictures, china, and books. Keenly interested in yachting and other sports, he frequently visited Europe, and had a house in London. He died in Rome, March 31, 1913. (*Consult* *Life*, F. L. Allen, 1949.) Morgan was succeeded in his business by his son, also John Pierpont (1867-1943). Born Sept. 7, 1867, he graduated from Har-



J. P. Morgan,  
American financier  
Russell

vard in 1889 and spent eight years in the London house now known as Morgan, Grenfell and co. Under his direction, J. P. Morgan and co. acted as American agents for the British government during the First Great War, and after 1918 issued loans to various countries totalling \$1,700,000,000. Morgan presented his house in Princes Gate, London, for the American Embassy in 1920, and his father's library for a research institution in 1923. The firm dropped its security underwriting in 1933 and concentrated on private deposit banking; the investment business was turned over to a new firm headed by Morgan's son Henry. In 1940 the "House of Morgan" was recreated as an incorporated bank. "J. P. junior" died in Florida, March 13, 1943.

**Morgan, LEWIS HENRY** (1818-81). American anthropologist. Born at Aurora, N.Y., Nov. 21, 1818, he graduated at Union College, 1840; practised law at Rochester, N.Y.; and entered the state senate, 1868. His *League of the Iroquois*, 1851, inaugurated the systematic study of tribal life. In *Ancient Society*, 1877, he classified human culture into lower, middle, and upper savagery; lower, middle and upper barbarism; and civilization. *Houses and House-life of the American Aborigines*, 1881, is a standard work on the evolution of primitive dwellings. Died at Rochester, Dec. 17, 1881.

**Morgan, LADY SYDNEY** (1783-1859). Irish novelist. She was born in Dublin, the daughter of an actor, Robert Owenson. She first became known by a successful first novel, *St. Clair*, 1804, and there followed some 20 books, of which the best-known are *The Wild Irish Girl*, 1806, and *O'Donnell*, 1814. In 1812 she married Thomas, afterwards Sir Thomas, Morgan, a doctor. She died in London, April 14, 1859.

**Morgan, THOMAS** (d. 1743). English writer. About 1700 he became an independent minister at



L. H. Morgan,  
American anthropologist



Lady Sydney Morgan,  
Irish novelist

Burton in Somerset, his native county, and afterwards at Frome and Marlborough, but his advanced views led, after a few years, to the loss of his office. He later made a reputation as a religious controversialist, his opinions being akin to those of the Deists. He wrote *The Moral Philosopher*, 1736, and *The Philosophical Principles of Medicine*, a subject he had studied. He contributed many tracts on the Trinitarian controversy. Morgan died Jan. 14, 1743.

**Morgan, THOMAS HUNT** (1866-1945). American biologist. Born in 1866, he was educated at Kentucky and Johns Hopkins universities. Professor of experimental zoology, Columbia university, 1904-1928, he was appointed director of the William Kerkhoff laboratories of biological sciences, California institute of technology, in 1928, where his work in biology and physiology earned him the Nobel prize in 1933. He was president of the American association for the advancement of science in 1929 and president of the national academy of sciences in 1927 and 1931. He was awarded the Copley medal of the Royal Society, 1939. He died Dec. 4, 1945. His principal publications included: *Evolution and Adaptation*, 1903; *Experimental Zoology*, 1907; *Heredity and Sex*, 1913; *Mechanism of Mendelian Heredity*, 1915; *Critique of the Theory of Evolution*, 1916; *The Physical Basis of Heredity*, 1919; *The Theory of the Gene*, 1926; *Experimental Embryology*, 1927; *The Scientific Basis of Evolution*, 1932; *Embryology and Genetics*, 1934.

**Morganatic Marriage.** Union of a member of a royal or princely family with one of lower rank. The marriage, which was usual in Europe, especially among Teutonic peoples, is binding and the children are legitimate; but they are debarred from succeeding to their father's titles and inheritance, and occupy a position assigned to them by the morganatic contract. These unions are sometimes called left-handed marriages, because the left hand was given in the marriage ceremony instead of the right. The word comes from the German *morgen*, referring to the *morgengabe*, or morning gift formerly made by the husband to his wife on the morning after the marriage night. In Great Britain morganatic marriage, as such, is not recognized, but the Royal Marriage Act requires the consent of the sovereign to the marriage of persons of the blood royal.

**Morgan le Fay, MORGAIN OR MORQUE.** One of the three half-sisters of King Arthur in the Arthurian legends. She is otherwise represented as a fay or fairy, with the power of assuming various forms. Her part in the Arthurian stories varies greatly in the different versions. In Malory's *Morte d'Arthur* she is said to be married to King Uriens of the land of Gore, and to have been one of the three queens who bore the stricken Arthur to the isle of Avalon.

In Italian legends her name, Fata Morgana (*q.v.*), is given to a mirage in the Straits of Messina. Consult *British Fairy Origins*, L. Spence, 1946.

**Morgantown.** City of Monongalia co., W. Virginia, U.S.A. It stands on the Monongahela R., which is navigable here, and on two lines of rly., and lies in a rich and active coal area. Until 1929 the city was important for glass production, powered by natural gas, but only three glass plants and a shirt factory remained after the economic depression of that year. The university of W. Virginia, founded in 1867, which in 1947 had 2,700 students, is a well-known centre of education. The university's school of mines conducts important research in coal production and oil and gas engineering. The university campus covers 66 acres on which a stadium which seats 40,000 was built in 1924. The town was founded about 1770, given a corporation in 1785, and made a city in 1905. Pop. 16,655.

**Morgarten.** Mountain of Switzerland. It stands in the centre of Zug, at the S.E. end of the Lake Aegeri, near Settel station on the rly. from Zürich to Schwyz. In 1315 trouble arose between the men of Schwyz and the Hapsburgs, the lords of the country. Leopold of Hapsburg collected an army of 15,000 men at Zug and marched towards Schwyz. To reach the town, his men pressed up the lower slopes of Morgarten, where about 1,500 Swiss were waiting for them, Nov. 15, 1315. Boulders and trunks of trees were rolled upon them as they advanced, and in the end they were driven down to the lake. This was the beginning of the struggle that ended in the freedom of the Swiss. A monument marks the site of the battle. See Switzerland.

**Morgat.** Village of France, in the dept. of Finistère. It lies near Crozon on the bay of Douarnenez, 5 m. N. of the Cap de la Chèvre, and is noted as a bathing resort. See Grotto.

**Morgen** (Ger., morning). Word used in Scandinavia, Prussia, Holland, and especially in S. Africa as a measure of land. In S. Africa a morgen is about two acres, in Prussia and Scandinavia it is less than one. It is supposed that the word originated in the amount of land ploughed during a morning.

**Morgenthau, HENRY** (1856-1946). American financier. Born at Mannheim, Germany, of Jewish parents, April 26, 1856, he went to the U.S.A. in 1865. He was ambassador to Turkey, 1913-16, but was better known as a leading financier. He was president of the Central Realty Bond and Trust co., 1899-1905, and of Henry Morgenthau co., 1905-13. His publications include *Secrets of the Bosphorus*, 1919; *An International Drama*, 1930; and a volume of reminiscences, *All in a Lifetime*, 1923. He died Nov. 25, 1946.

**Morgenthau, HENRY, JR.** (b. 1891), American politician. Born May 11, 1891, son of Henry Morgenthau (*v.s.*) he was educated at Cornell university. Editor of the *American Agriculturist*, 1922-34, he was conservation commissioner of N.Y. State, 1931, and government farm credit administrator, 1933. Roosevelt made him under-secretary of the treasury, 1933, and he became secretary the following year, resigning in 1945 to return to his private business. His book, *Germany is Our Problem*, was published in 1945.

*Pron.* Morgan-thaw.

**Morghen, RAPHAEL SANZIO** (1758-1833). An Italian engraver. Born at Florence, June 19, 1758, he was instructed by his father and uncle, who were engravers, and sent to Rome as a pupil of Volpato. He engraved Raphael's figures of Poetry and Theology in the Vatican in 1781. In 1787 he produced Guido's *Aurora*. He also engraved *The Last Supper* after Leonardo, *The Transfiguration* and *The Madonna della Sedia* after Raphael, and Van Dyck's *Duke of Moncada*. Morghen died at Florence, April 8, 1833.

**Morgue, THE.** Former building in Paris. It was situated behind Notre-Dame, and in it the corpses of unknown persons, mainly those recovered from the Seine, were exposed here on marble slabs,

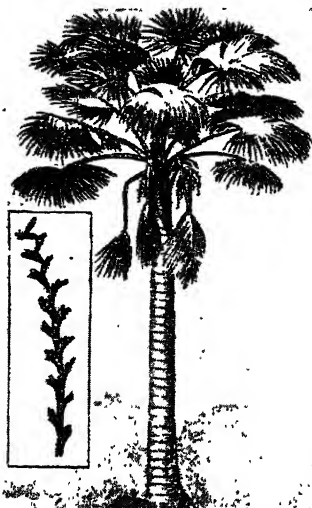


R. S. Morghen,  
Italian engraver  
After P. Caronni

pending identification. The building, which was erected in 1864, replaced an edifice with the same name and function built on the Quai du Marché-Neuf at the time of the Revolution. In 1924 the Morgue was pulled down and a new mortuary erected on the riverside at the Quai de la Rapin. The site of the original Morgue is now a public garden.

**Morhange** OR MÖRCHINGEN. Town of Lorraine, France, in Moselle dept., about 20 m. S.E. of Metz. The battle of Morhange in the First Great War was fought between French and German forces, Aug. 14-23, 1914. The French offensive resulted in initial gains, but the French were checked on coming up against the German prepared positions and forced to retire behind the Meurthe, suffering heavy casualties.

**Moriche Palm** (*Mauritia flexuosa*). Large tree of the family Palmae, native of S. America.



Moriche Palm. South American palm tree; left, inset, a single flower spray

The enormous leaves are fan-shaped, forming a huge crown to the lofty trunk. The fruits have a tessellated appearance due to a covering of hard, shining scales. From the young fruits a beverage is prepared, and the sap, fermented, becomes palm wine. A sago-like food is yielded by the soft inner part of the stem; and the young leaves torn into strips are twisted into string and cordage.

**Moriez**, ZSIGMOND (b. 1879). Hungarian novelist. Born June 30, 1879, at Csécs, he became a journalist. He was editor of the literary periodical Nyugat (The

West), wrote many powerful novels, especially about Hungarian peasant life, some of which were translated into other languages, and a number of successful plays, among which *Sári Biro*, 1910, stands out. He was considered a leader of naturalism in Hungarian literature.

**Morier**, JAMES JUSTINIAN (c. 1780-1849). British diplomatist and writer. Member of a family of diplomatists, he was born at Smyrna (Izmir), held an appointment at the Persian court, and wrote books on his travels in Persia, Armenia, and Asia Minor, and a delightful Oriental romance, *The Adventures of Hajji Baba of Ispahan*, 1824. Died at Brighton, March 19, 1849.



J. J. Morier, British diplomatist After W. Bozall

**Mörrike**, EDUARD (1804-75). German poet. He was born at Ludwigsburg, Württemberg, Sept. 8, 1804, and had already published a novel, *Maler Nolten*, 1832, when in 1834 he became pastor at Cleversulzbach, Württemberg. In 1838 his poems won him fame. In 1843, owing to ill-health, he resigned his pastorate, but he was professor of German literature at Stuttgart, 1851-66. He died June 4, 1875.

**Morillo**, PABLO (1778-1837). Spanish soldier. Born May 5, 1778, he fought against Napoleon, and in 1815 was sent with an army to S. America to reduce the rebels to obedience. In Colombia and Venezuela he acquired a sinister reputation by his cruelties. He secured possession of Cartagena and Bogotá, but afterwards was defeated by Bolívar and returned to Spain in 1820. In 1823 he submitted to the French and was exiled, but in 1832 he was again in Spain, fighting against the Carlists. He died July 27, 1837.

**Morin**. Name of two small rivers in France. The Grand Morin joins the Marne near Esbly, and the Petit Morin, rising in the marshes of St. Gond, N. of Fère-Champenoise, joins the Marne at La Ferté-sous-Jouarre. Both were prominent in the First Great War. See Marne, Battles of the.

**Morina**. Genus of perennial herbs of the family Dielsaceae, natives of Asia. They have long, slender, spiny-toothed and opposite leaves, and tubular flowers in whorls above the upper leaves. In the most frequently cultivated

species, *M. longifolia*, they are at first white, then pink, later crimson. In *M. coultieriana* they are pale yellow.

**Morioka**. Town of Japan, in Honshu. An island town, on the N.E. rly., 330 m. N. by E. of Tokyo, it is the prefectural capital of Iwate on the banks of the Kitakami. It contained in feudal times the seat of the Nambu family; Nambufuji, or Iwate-san, lying 22 m. to the N.W. It is the centre of an agricultural dist. noted for horse rearing. Textiles and hardware are the chief industrial products. Pop. 69,127.

**Moriscos**. Name given to the Moors in Spain after their conquest in 1492. After various measures of persecution and restriction of rights, notably during 1500-25 and under Philip II in 1568, they were finally expelled from Spain under Philip III in 1609-10, with the exception of those who had become Christians, and of the children under four, who were retained and baptized. See Moors; Spain: History.

**Morison**, JAMES AUGUSTUS COTTER (1832-88). British author. Born in London, April 20, 1832, he passed his childhood in France. He was educated at Highgate school and Lincoln College, Oxford, and became associated with the Positivists. His book, *The Service of Man*, 1887, is an argument for Positivism; he also produced a fine *Life of S. Bernard*, 1863. He died Feb. 26, 1888.

**Morison**, ROBERT (1620-83). Scottish botanist. Born at Aberdeen, he was educated at the university there, and was intended for the ministry, but abandoned that career to serve against the Covenanters. Dangerously wounded at the battle of the Brigg of Dee, he fled to Paris, studied botany and zoology, and took a medical degree at Angers. About 1650 he received an appointment in the



Morina. Foliage and flower whorls of *M. longifolia*. Inset, single flower



household of the duke of Orleans as one of his physicians and helped in the oversight of his gardens at Blois. Morison crossed to England with Charles II, who made him his senior physician and botanist. Professor of botany at Oxford. from 1669, he died Nov. 10, 1683. His work in identifying genera and species made him one of the greatest pioneers in classification.

**Morisot, BERTHE MARIE PAULINE** (1841-95). French painter. Born at Bourges, Jan. 14, 1841, she studied under Oudinot, with whom she painted landscape. Later she met Manet, painted figure subjects under his direction, and married his brother Eugene in 1874. An exhibitor at the Salon from 1864, she joined the Impressionists and showed work at their first exhibition in 1874. The finest example of her art, *A Young Girl at a Ball*, is in the Luxembourg. She died March 2, 1895.

**Morlaix.** Town of France, in the dept. of Finistère. It lies on the river Morlaix, formed by the streams Jarlot and Queffieu, 37 m. by rly. E.N.E. of Brest, and 4 m. from the sea. The tidal river allows of a small harbour, and there is trade in grain, vegetables, dairy produce, horses, etc., and a tobacco factory in the town. A branch rly. runs to Roscoff and other coastal villages. The 16th century church of S. Melaine has interesting carvings. Pop. 15,121.

**Morland, GEORGE** (1763-1804). British painter. Born in London, June 26, 1763, he was instructed by his father, H. R. Morland, and influenced by George Stubbs, the animal painter. He exhibited at the R.A. from 1778 to 1804, and at the Society of Artists, 1777-



George Morland, British painter

82, almost wholly subjects of a domestic nature and country scenes with animals. Morland married in 1786 the sister of William Ward, whose engravings helped to popularise his work. He painted with facility, but loose living involved him in constant financial difficulties, and he died in a sponging-house in London, Oct. 27, 1804. His masterpiece, *The Inside of a Stable*, 1791, is in the National Gallery, London. Of his *Dancing Dogs* 500 engraved copies were sold in a few weeks. See *Engraving*; consult *Life and Works*, G. C. Williamson, 1904.



George Morland. *Horses in a Stable*; a characteristic example of the artist's treatment of animal life, now in the Victoria and Albert Museum

**Morley.** Mun. bor. of the W. Riding of Yorkshire, England. It is 4 m. S. of Leeds, and connected therewith by rly. S. Peter's church is modern, as is the town hall. Industries include the manufacture of woolen goods. Mentioned in Domesday, Morley was a village until the industrial developments of the 19th century. It became a corporate town in 1885, and since 1918 it has united with Batley to send a member to parliament. The 1st earl of Oxford and Asquith was born here. Since 1937 the bor. has included Ardsley, Drighlington, and Gildersome. Near is Howley Hall, long the seat of the Saviles. Market days, Fri. and Sat. Pop. 39,625.

**Morley, JOHN MORLEY, 1ST VISCOUNT** (1838-1923). British author and politician. The son of a surgeon, he was born at Blackburn, Dec. 24, 1838, and educated at Cheltenham and Lincoln College, Oxford. While studying for the bar he edited the *Literary Gazette*, and in 1867 published his first book, a study of Burke. That year he became editor of the *Fortnightly Review*, and during 1868-70 was in charge also of the *Morning Star*. Fine studies of Voltaire, Rousseau, and Diderot and

the *Encyclopédistes* appeared in the 1870's, and were included in his *Critical Miscellanies*. During 1880-83 he was editor of the *Pall Mall Gazette*. Morley edited Macmillan's series on English men of letters and English statesmen, contributing volumes on Burke, Walpole, and Cromwell.

He entered politics as Liberal M.P. for Newcastle-on-Tyne in 1883, which involved severing his connexion with journalism though not with publishing. Within three years he was Gladstone's chief secretary for Ireland, a post he held again 1892-95. From 1896 to 1908, when he was created Viscount Morley of Blackburn, he sat for Montrose burghs; he was secretary for India, 1905-10, carrying through the Morley-Minto reforms, and then lord president of the council, resigning in 1914 upon Great Britain's declaration of war.

When the Order of Merit was instituted in 1902, Morley was made a member, and from 1908 he was chancellor of the university of Manchester. From 1895 he was engaged on his monumental *Life of Gladstone*, published 1903. In 1891 he had become a bencher of Lincoln's Inn, and in 1894 a trustee of the British Museum. In 1902 Carnegie presented to him the library bought from Lord Acton's executors, and this Morley handed over to Acton's university, Cambridge. *Recollections*, published 1917, gave confidential glimpses of politics, and its literary grace charmed readers. Morley died Sept. 23, 1923. Consult *Collected Works*, 15 vols., 1920; *Life*, J. H. Morgan, 1924; *Free Minds*: J. M. and His Friends, F.W. Knickerbocker, 1945.



Morley arms



Lord Morley, British statesman  
Baines

**Morley, CHRISTOPHER DARLINGTON** (b. 1890). American writer. Of British descent, he was born at Haver-

ford, Pa., May 5, 1890. He went to the university there and to New College, Oxford. Having been with the publishing firm of Doubleday, Page and Co., 1913-17, and on the New York Evening Post, 1920-24, he was contributing editor of the Saturday Review of Literature, 1924-39. He made new friends in Great Britain by his part in the international radio feature, Transatlantic Quiz. As a novelist he began with *The Eighth Sin*, 1912, but made his name with *Thunder on the Left*, 1925, a finely-written fantasy, later dramatised. Essays followed in 1927, and *The Trojan Horse*, 1937; *Kitty Foyle*, 1939; *The Middle Kingdom* (poems), 1944; *The Old Mandarin*, 1947; *The Man Who Made Friends with Himself*, 1949.

**Morley, EDWARD W.** (1838-1923). American physicist, for whose work on relativity with A. A. Michelson see Michelson.

**Morley, HENRY** (1822-94). British man of letters. Born in London Sept. 15, 1822, the son of a doctor, he was educated at Newwied, Germany, and King's College, London. He became associated with Household Words, *All the Year Round*, and *The Examiner*, of which he was editor

1859-64. In 1865 he became professor of literature at University College, and in 1878 at Queen's College. He was principal of University Hall, Gordon Square, 1882-90, and died May 4, 1894. Sound in criticism and an excellent teacher, he edited several libraries, including Morley's *Universal and Cassell's National*, and wrote a series of volumes on English writers down to Shakespeare, 1887-95; also *Lives of Palissy*, 1852; *Cornelius Agrippa*, 1856; *Marot*, 1871.

**Morley, SAMUEL** (1809-86). British merchant. Born in London, Oct. 15, 1809, the son of a hosiery merchant, he entered the family firm of I. and R. Morley, and became sole owner in 1855. Under

his guidance it became the largest of its kind, with several factories in and around Nottingham and branches all over the world.

A strong Nonconformist, he generously supported the Congregationalists. In 1865 he entered parliament as Liberal M.P. for Nottingham, but the following year he was unseated on a petition. In 1868 he was elected for Bristol and remained an M.P. until 1885. He was greatly interested in education, supported temperance, and was eager to remove Nonconformist disabilities. At one time a proprietor of the *Daily News*, and for some years a member of the London School Board, he died Sept. 5, 1886, having refused a peerage. In 1912 his eldest son, Samuel Hope Morley, became Baron Hollenden.

**Morley, THOMAS** (1557-c. 1603). English composer. A pupil of William Byrd, he studied music at Oxford, and in 1592 was made a gentleman of the chapel royal. He was at one time organist of St. Paul's, and in 1598 secured a monopoly for the issue of song books. He composed many ballets, madrigals, and canzonets for voices as well as instrumental music, his best known piece being the music to *It was a Lover and His Lass*, in *As You Like It*. His *Plaine and Easie Introduction to Practicall Musicke*, 1597, was the first treatise of this kind published in England.

**Morley College.** A London institution for the education of adolescents and adults from the age of 16. The college was founded in 1885 as part of the Old Vic, and was named after Samuel Morley, who gave it generous financial help. Opened in Waterloo Road, it was transferred to 61, Westminster Bridge Road, S.E.1, in 1924. A new wing was built in 1937, and this was the only part of the building remaining after the college was hit by a German bomb in Oct., 1940. The college is an aided institute under the L.C.C., from which it receives an annual maintenance grant. It offers evening classes in social science and history, philosophy and psychology, languages, English, drama, mathematics, science, art, music, dancing, and gymnastics. Weekly lec-

tures, open to non-students, are held on subjects of general interest.

**Mormon, BOOK OF.** Scriptures of the Mormon Church, purporting to be a translation of an alleged revelation to Joseph Smith. In 1827 Smith asserted that under angelic guidance he had discovered these scriptures engraved on a number of gold plates which, by Divine assistance, he professed himself able to translate. The work appeared in 1830, and is a curious story of the prehistoric inhabitants of N. America, couched in an imitation of Biblical phraseology and full of anachronisms, many of which were corrected in later editions. Smith asserted that the original was written in "reformed Egyptian" characters and in a dialect of Hebrew, which he was able to translate by looking through two crystals he called Urim and Thummim.

The Book of Mormon was first published for the "translator" by E. B. Grandin of Palmyra, N.Y., in 1830. Many editions have been published in English; and it has been translated into many other languages. The original MS. is in the custody of Frederick M. Smith, of Independence, Mo.. U.S.A.

**Mormons.** Usual designation of a religious sect founded in U.S.A. under the title of The Church of Jesus Christ of Latter Day Saints. The origins of the Mormon religion are to be found in the life of Joseph Smith, upon whose alleged revelation their tenets are based. Having produced the Book of Mormon (v.s.) and communicated his "revelations" to his friends, in 1830 he formally organized the church of which he was the presiding elder. There were five other members present, and from these six arose the organization of the Church of Latter Day Saints. The earnestness of its founders, and their advent at a time when religious revivals were stirring people throughout the New England states, caused the movement to spread rapidly. From the beginning a great feature of Mormonism was the sending out of missionaries, and by the close of the year many converts had been baptized. The doctrines of the Church at that time are described under the article *Mormons, The Reorganized*.

In 1831 the Church moved to Kirtland, Ohio, where a temple was built. The inhabitants, however, resented the Mormons' intrusion, disliked their doctrines, and finally insisted upon their departure. Ever moving westwards, the headquarters of the Church were trans-



Christopher Morley,  
American writer



Samuel Morley,  
British merchant



Henry Morley,  
British author  
W. & D. Downey

ferred in 1838 to Far West, Missouri. Persecution followed, Smith and others being charged with treason, and when they escaped the church moved to Commerce, Illinois, which they renamed Nauvoo. The city grew rapidly, and it seemed as though Zion had been reached. All this time missionaries had been busy in Europe, especially in England, and the stream of immigrants steadily increased. It was, however, in the midst of this prosperity that Joseph Smith received his fatal "revelation" on polygamy, 1843. At first he and those to whom he communicated the revelation refrained from announcing it to the world; some missionaries, indeed, whilst stoutly denying the truth of the rumours which had rapidly gone abroad, were secretly polygamists.

Amongst the Mormons themselves there was great opposition to the doctrine, and in 1844 plurality of wives was denounced in a Nauvoo paper. The indignation of the Gentiles, as the Mormons called their neighbours, was intense, and they resolved to drive the Mormons out by force. In the commotion which ensued, Smith and his brother Hyrum, who were in gaol on a charge of treason, were dragged out and shot. After much irresolution, Brigham Young was elected first president. Amid the confusion in their own ranks and the bitter hatred of their neighbours, the Mormon Church would have fallen to pieces had it not been for his able though unscrupulous management.

In 1846, under his guidance, the whole church began migration westward, and in July, 1847, the first party reached Great Salt Lake, near which they decided to build their city. Crops were planted, houses were built, yet another temple erected, and over all Young ruled with a rod of iron. The population increased with immigration, and in 1852 numbered over 25,000. In that year the polygamy revelation was published and the Reorganized Church (*v.i.*) broke away. Young had been trying to obtain the recognition of the Salt Lake settlement as a state, under the name of Deseret, but the publication of the revelation was fatal to his hopes. The Territory of Utah was organized instead, and Young was made governor; but he so misused his power that troops were sent to uphold government authority and the Mormon War broke out in 1857. There was, however, little friction with the troops; Young

gave in and never afterwards set himself so resolutely against the Federal power.

From 1862 the U.S. government did its utmost to suppress polygamy, but with little success until in 1882 the Edmunds Law was passed, disenfranchising polygamists and convicting nearly 500 persons of unlawful cohabitation. Young had died in 1877, and in 1890 the president of the Church, Wilford Woodruff, published a manifesto advising his followers "to refrain from contracting any marriage forbidden by the law of the land." On the condition that no plural marriages should thenceforward take place, Utah was in 1896 made a state. Ostensibly polygamy was abandoned, but in 1903 Joseph Fielding Smith (1838-1918), grandson of the "prophet" and president of the Church, admitted on oath that since 1890 he had lived with his four wives who had borne him children. On Smith's death in 1918 the presidency was given to Heber J. Grant, himself a polygamist.

The doctrines of the Utah Church, as distinguished from those of the Reorganized Church, are baptism for the dead, and celestial marriage, a doctrine teaching that, whereas death dissolves all earth-made marriages, a celestial marriage is for eternity, and women who are "sealed" to a man are his in heaven, where the greater the number of wives and children, the greater the glory. Moreover, as later teaching unfolded, the more children begotten, the more bodies for the reception of disembodied spirits.

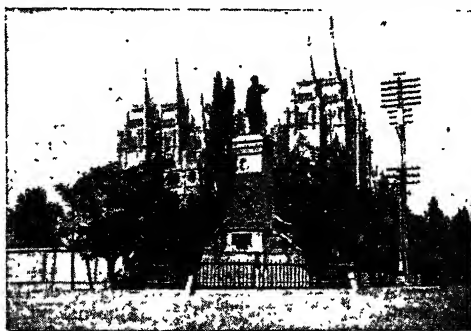
In the court of common pleas, Lake City, Ohio, it was decided in 1880 that the Reorganized Church was, so far as property was concerned, the legal successor and continuation of the Church founded by Joseph Smith, but the main body has always remained in communion with Brigham Young and his successors.

In 1948 the total membership was about 870,000, mostly in Utah, where they constituted about two-thirds of the pop. in 1940 (they were about three-quarters of the pop. in the 1920s). There are a

number of Mormons also in Idaho and Arizona. Of their eight temples, four are in Utah, one each in Arizona and in Idaho, at Hilo in Hawaii, and at Cardston, Alberta.

*Bibliography.* History of Salt Lake City, F. W. Tullidge, 1886; The Founder of Mormonism, I. W. Riley, 1902; The Story of the Mormons, W. A. Linn, 1902; Scientific Aspects of Mormonism, N. L. Nelson, 1904; The Mystery of Mormonism, S. Martin, 1920.

**Mormons, THE REORGANIZED.** Church of Latter Day Saints. After the death of Joseph Smith in 1844 a number of the Mormons, distrusting Brigham Young and refusing to acknowledge his election to the presidency of the Church, established in Zarahemia, Wis., the Reorganized Church of Jesus Christ of Latter Day Saints, 1851-



Mormon Temple at Salt Lake City, Utah, with statue of Brigham Young in foreground

52. In 1860 they were joined by Joseph Smith, the "prophet's" eldest son, who became president. They denied the doctrines of polygamy and baptism for the dead.

They believe that through apostasy from the primitive doctrines of the Christian church, the authority to administer in the ordinances of the gospel was lost. This authority was restored to earth by angelic administration in 1829-30, and men were set apart to serve in the various grades of the priesthood. These men and their successors in the work taught the principles of the Gospel, including those enumerated in the epistle to the Hebrews; faith, repentance, baptism by immersion in water, laying on of hands. The promised gifts and powers of the gospel are enjoyed by the faithful; including the gifts of prophecy, revelation, healing, visions, tongues. The "Saints" look forward to the second personal advent of Christ. Another ideal is that of a people gathered and educated in righteousness, equal in all things temporal and spiritual. The present headquarters of the

Church are in Independence, Mo., and membership is about 113,000. *Consult* History of the Church of Jesus Christ of Latter Day Saints, H. C. Smith, 1901.

**Morning Advertiser**, THE. London morning newspaper and organ of the Licensed Victuallers' Association. It was established Feb. 8, 1794. Under the editorship (1850-71) of James Grant, it was one of the first London papers to accept Reuter's telegrams. Lord Brougham and Sir David Brewster were early contributors, and the editors have included Capt. Hamber, Col. A. B. Richards, and Hamilton Fyfe.

**Morning Glory** (*Ipomea purpurea*). Major convolvulus of the seedsman. A twining, climbing herb, one of the family Convolvulaceae, it is a native of tropical America. The leaves are heart-shaped, alternate, and without teeth, the flowers large and funnel-shaped. *See* Convolvulus.



Morning Glory. Spray of foliage and flower

**Morning Heroes**. A choral symphony by Arthur Bliss. It was composed in honour of those who fell in the First Great War, with words selected from poets ranging from Homer to Wilfred Owen. It was first performed at the Norwich Festival in 1930.

**Morning Post**, THE. Former London daily newspaper. It was the oldest daily political newspaper and was established by Henry Bate, Nov. 2, 1772, as The Morning Post and Daily Advertiser, and edited by him during 1775-80. Its early contributors included Lamb, Coleridge, Southey, Wordsworth, Sir J. Mackintosh, Arthur Young, and Mackworth Praed. In 1795 it was acquired by Peter and Daniel Stuart for £600. It passed into the hands of the Cromptons, paper manufacturers, in 1849, when Peter Borthwick, became first manager and then editor, being succeeded in 1852 by his son Algernon, afterwards Lord Glenesk, who became proprietor in 1876 and left it to his only surviving daughter. She in 1893 married the 7th earl Bathurst. It was sold to a group of Conservatives in 1924.

Its editors have included Sir William Hardman, 1872-90; Alger-

non Locker, 1895-97; J. Nicol Dunn, 1897-1905; Fabian Ware, 1905-11; and H. A. Gwynne. The later success of the paper dated from the reversion in 1881 from 3d. to its original price of 1d., but during the First Great War it was raised to 2d. In 1927 it was again reduced to 1d. For many years it represented generally the political views of the Right Wing of the Conservative party, though maintaining a sturdy independence of opinion. The last number appeared on Sept. 30, 1937; the paper was then absorbed by the Daily Telegraph, which became the Daily Telegraph and Morning Post. A memorial by W. H. Hindle was published in 1937; *consult also* Lord Glenesk and the Morning Post, R. Lucas, 1910.

**Mornington**. Village of co. Meath, Eire. It stands on the Boyne, 2 m. from Drogheda. From it the family of Wesley, or Wellesley, to which the duke of Wellington belongs, took the title of earl, still held by the duke. Richard Colley, M.P., who took the name of Wesley on succeeding to some estates, was made Baron Mornington in 1746, and his son Garret was made an earl in 1760. The 2nd earl was the Marquess Wellesley.

Mornington is the name of the largest of the Wellesley Islands, Queensland. It is situated at the S. end of the gulf of Carpentaria. Another Mornington is a watering-place of Victoria and yet another is a suburb of Dunedin, N.Z.

**Morny**, CHARLES AUGUSTE LOUIS JOSEPH, DUC DE (1811-65). French statesman. He was born in Paris, Oct. 21, 1811, an illegitimate son of Hortense, queen of Holland, and half-brother to Napoleon III. In 1842 he was elected deputy and, having taken part in the coup d'état of Dec. 2, 1851, he became Napoleon III's first minister of the interior. He was president of the Corps Législatif from 1854 onwards, fulfilled a mission to Russia, 1856, and was made duke in 1862. He wrote several vaudeville pieces, under the pseudonym of M. de St. Rémy. He died in Paris, March 10, 1865. *Consult* Imperial Brother, M. Chapman, 1932.

**Moro** (Spanish, Moor). Mahomedan people in the Philippine islands. Numbering 277,500, one half are in Mindanao, the other mostly in Palawan and the Sulu archipelago, with offshoots on the Borneo coast. Mainly of Indonesian stock, already Muslimised when they arrived prior to the Spanish conquest, they betray

Arab admixture, and were formerly addicted to piracy.

**Morobe**. Town of New Guinea. Situated on the shore of Hercules Bay in the narrow E. portion of the island, it is one of the chief harbours.

**Morocco**. Country of Africa, an associated state of the French Union, but with a Spanish zone. It lies W. of Algeria, with a coastline along the Mediterranean Sea and the Atlantic Ocean.



Morocco arms

The High, Middle, and Anti-Atlas ranges cross the country N.E. from Agadir, the highest areas exceeding 15,000 ft. in elevation. The Rif, a much lower range, flanks the N. coast. The parallel ridges of the Atlas form part of the great system of fold mountains which stretches discontinuously across the world from N.E. India and includes the Alps and Apennines; for this reason N. Morocco is physically European in character, and Africa may be said to begin at the edge of the Sahara. Perennial streams, the Moulouia (Muluya) and Sebou (Sebu), drain the N. slopes. S. is the Sahara, and the S. streams, Ziz, Dra, Guir, terminate on the desert edge. The S. side of the Sebou valley is forested.

Agriculturally and commercially the country is in a state of transition. Colonisation by Europeans is actively encouraged and experimental gardens and nurseries have been established by the authorities. The cultivation of barley and other crops is being extended. In the Sebou valley there are thousands of acres of vineyards under native tillage; European vineyards have prospered near Casablanca. There are extensive orchards of olive, fig, orange, lemon, palm, and almond trees. Tunny and sardines are caught in Mediterranean waters. Copper, lead, antimony, silver, gold, and petroleum occur, and iron ore is exported from the Spanish zone. Cotton goods and sugar are the principal imports; barley, eggs, and wool being the chief exports. Trade is almost entirely with France and Algeria, with the latter both by sea and land; the United Kingdom supplies about a quarter of the imports. Nearly half the shipping at Moroccan ports flies the French flag.

Railways connect Marrakesh with Casablanca, Rabat, Meknes, Fez, and Oudja, beyond which a

short extension of 9 m. makes a junction with the rly. system of Algeria. A narrow gauge line connects Ceuta with Tetuan. Roads, many of which are suitable for motor traffic, connect the large towns and are being extended rapidly; a main coast road joins Rabat to Mogador.

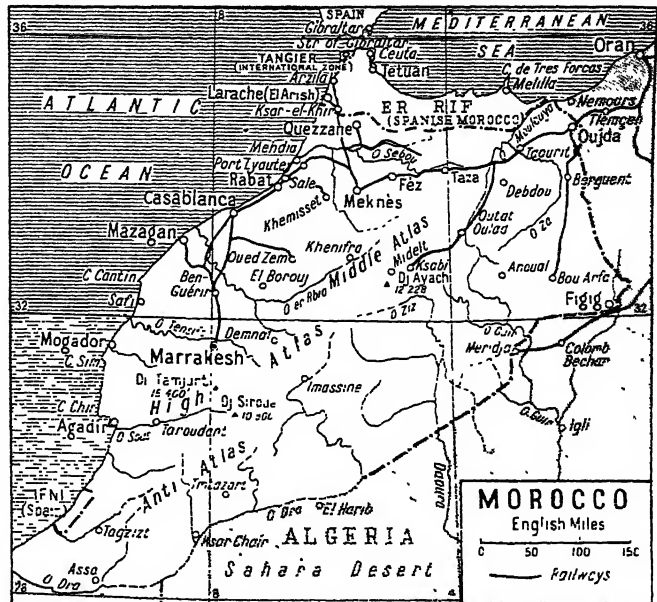
Morocco was a Roman province, called Mauretania. Throughout the Middle Ages it was in the hands of Mahomedan invaders, who used it to obtain reinforcements for the Moorish conquests and occupation of Spain. After the Moors were expelled from Spain in 1492, the Spanish Moors and Jews were a source of strength to Morocco. In 1577 both France and England had accredited representatives in the country, and Tangier was occupied by the English, 1662-84. French penetration of the country led to the Conference of Madrid in 1880, when the powers drew up a code defining the status and rights of foreigners. French progress in Algeria led to an active participation in Moroccan affairs, and in 1904 England gained a free hand in Egypt by granting the same privilege to France in Morocco.

#### The Agadir Incident

Spanish fears were pacified by the establishment of the Spanish zone, but Germany intervened in 1905 and prevented the acceptance by the sultan of the reforms proposed by France; this led to the Algeiras Conference, 1906, where the way for French control of Morocco was opened. In 1911 France and Spain were busy with military occupations, the German Mannesmann brothers were intriguing in the S., and the German warship Panther appeared at Agadir and precipitated a crisis, as a consequence of which France purchased the right to protect Morocco by concessions of territory adjacent to German Cameroons.

The sultanate of Morocco was formerly an independent state, being the last of the Barbary empires. In 1912, however, the sultan accepted the protectorate of France, and by the Franco-Spanish treaty of the same year the country was divided into three areas with different administrations. Tangier and dist., about 140 sq. m. in area with 60,000 inhabitants, was made a special zone; the N. coast area became a Spanish zone, about 11,000 sq. m. in extent, with about 550,000 people. The remainder was left to the sultan controlled by a French resident-general.

In 1923 both France and Spain were engaged in the pacification



MOROCCO. Map of this North African country, an associated state of the French Union, with coastlines on the Atlantic and Mediterranean

of their respective spheres. Marshal Lyautey (q.v.), the French resident-general, arrived at Taza in April to organize a campaign against the dissident tribesmen of the Beni-Warain, and in the Wazanf region. In June of that year Spanish troops were successful against Raisuli, but in July, 1921, they suffered a severe reverse in the Melilla zone. At Sidi Dris and elsewhere heavy defeats were experienced. A column under General Navarro was cut off at Monte Arruit and destroyed after a stout resistance. General Silvestre, the commandant-general, and thousands of troops were killed at Anual, and in August Melilla was invested by the tribesmen.

#### The Rising of the Riffs

Severe fighting between the Spaniards and the tribesmen continued throughout 1924. Abdel Krim, the Riff leader, compelled the retirement of the Spanish forces in the western zone of the Spanish protectorate in Dec., and in Jan., 1925, captured Raisuli, now Spain's native auxiliary. The Marquis de Estella, as commander-in-chief in Morocco, supervised the retirement to the coastal zone.

In May, 1925, the victorious Riffs carried the war into the French portion of Morocco, but this proved fatal. The French and Spanish forces together took the offensive with such good results that in the middle of 1926 Abdel Krim surrendered. After this the

pacification of the country was rapidly completed.

The sultan of Morocco resides in the French zone, usually at Rabat, but all effective power in that zone is exercised by the French resident-general. The protectorate authorities have created a large body of modern law, edicts of which are issued by the sultan, but promulgated and enforced by the resident-general. In the Spanish zone the sultan's powers are delegated to a khalifa, chosen from two candidates presented by the Spanish govt. Administration is controlled by a Spanish high commissioner at Tetuan. The Spanish civil war of 1936-39 began with a rising of Spanish troops in Morocco in July, 1936, and throughout the hostilities in Spain Moorish troops formed a large proportion of Gen. Franco's forces. In 1937 there was considerable German infiltration into Spanish Morocco, which was clearly intended to develop military as well as commercial interests.

British capitulations in French Morocco, which had existed since 1856, were abolished by an Anglo-French convention on July 29, 1937, and British subjects became liable to the jurisdiction of the same tribunals as the French. British capitulations in Spanish Morocco continue in force, and the British postal agency at Tetuan is subordinate to the central British post office at Tangier.



After the defeat of France in 1940, French Morocco adhered to Vichy France, but, following the British-U.S. landings in N. Africa in 1942, the territory became an important allied military, air, and naval base and source of raw materials.

The sultan's capitals are Fez, Marrakesh, and Rabat. The last-named is the chief seat of government and contains the main residence of the resident general. The French area contains 220,000 sq. m. Pop. 8,993,000. *See Africa.*

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**Morocco Leather.** Leather made from tanned goatskins. It was first made in Morocco and introduced into Europe by way of Spain in the 15th cent. It is used principally for upholstering furniture, book binding, and in the making of bags. *See Leather.*

**Moron** (Gr. *moros*, dull). Term for an adult whose mental development is arrested at about that of a 7-year-old child.

**Morón.** Town of Spain in the prov. of Seville, near the river Guadaira. Its church dates from the 16th century. Famous for marble and chalk. Pop. 18,700.

**Moroni, GIAMBATTISTA** (c. 1520-78). Italian painter. Born at Bondo, near Bergamo, he

studied under Il Moretto at Brescia and was influenced by Lorenzo Lotto. He died at Bergamo, Feb. 5, 1578. His paintings of religious subjects are of small importance, but his portraits attained a very high level and had some influence on Van Dyck. The most notable are the Portrait of a Tailor, and the Portrait of a Lawyer, both in the National Gallery, London.

**Morosini, FRANCESCO** (1618-94). Italian soldier. A member of an ancient Venetian family, he first distinguished himself in the Venetian navy at Naxos, 1650. He defended Candia heroically against the Turks, 1667-68, and in 1684 rapidly conquered the Peloponnesus and captured Athens at the cost of destroying the Parthenon. Awarded the name

Peloponnesiaeo and elected doge in 1688, he sailed against the Turks for the last time in 1693, but they withdrew in terror. He died Jan. 6, 1694.

**Morpeth.** Mun. bor. and market town of Northumberland. It stands on the Wansbeck, 17 m.



Morpeth arms

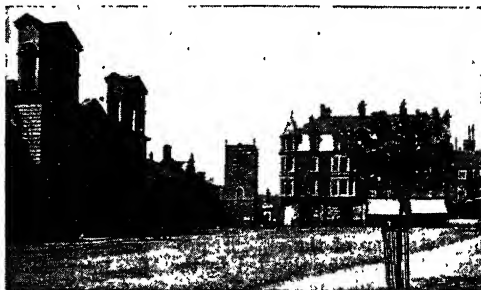
from Newcastle. The church of S. Mary dates from the 14th century, and the grammar school from the 16th. Of the castle only the keep survives. There is a town hall, a gaol, and in the main street a clock tower. At Newminster, near the town, an abbey was established in the 12th century, and there are remains of other old buildings in the neighbourhood. The industries include engineering works and iron foundries, while in the neighbourhood are extensive collieries and market gardens. It is a rly. junction. An important cattle fair is held. The town grew up around the castle, once held by the Daecres. It is a bor. by prescription, and is governed by a mayor and council. Morpeth gives its name to a county constituency. Market day, Wed. Pop. 10,000.

**Morpheus** (Gr. *morphe*, form, shape). In Greek mythology, the son of sleep and god of dreams.

**Morphia** or MORPHINE. Alkaloid contained in opium, of which it is the active principle. In medicine it is the best drug for the relief of pain, and thus induces sleep. It may be either taken by mouth or injected under the skin. When used as a routine measure a craving for morphia may be induced in the patient (*see Drug*). Emetics, artificial respiration, and heart and respiratory stimulants are serviceable antidotes to morphia poisoning. Morphia was first isolated in 1816 by the German chemist Sertürner, and forms crystalline salts soluble in water. The supply of morphia is controlled by the Dangerous Drugs Acts. *See Opium.*

**Morphology.** The branch of physical sciences concerned with the form of organisms. In the

narrow sense it infers the study of the externally apparent features such as, in plants, the system of branching, phyllotaxis, leaf shape, inflorescences, and general flower structure; and, in animals, segmentation, and number and type and form of appendages and of surface covering. Since the external features are to a great extent dependent on the internal construction, the meaning of the term often includes studies of the internal parts which can best be carried out by cutting them apart. Strictly speaking, this is anatomy, especially when the method of approach is used for gaining knowledge of the grosser internal features themselves. If on the other hand cutting has for its end the study of the tissues as such rather than their distribution, such studies constitute histology and, when aimed at the details of cell structure, cytology.



Morpeth, Northumberland. Market place, looking towards the old clock tower

Valentine

As a branch of biology, morphology is primarily important to the taxonomist since the external form of organisms provides sets of readily acquired facts upon which recognition of types, similarities, and differences can be based and so has been the foundation of classification (*q.v.*) of organisms according to nearness of relationship. But morphology is not entirely dependable for this purpose. Organisms may have features which are similar because they have common origin, or because of similarity of function of organs of different origin (analogous structures); or alternatively organs may differ in appearance but nevertheless be considered logically as having originated from the same ancestral type (homologous structures). On this account there is a rapidly growing tendency to supplement, if not to supplant, morphology with anatomical, cytological, physiological, and ecological facts.



Giambattista Moroni,  
Italian painter

**Morphy, PAUL CHARLES** (1837–84). American chess player. Born in New Orleans, June 22, 1837, he defeated the leading players in New Orleans before he was twelve years old. In 1857 he won the first prize at the American chess congress, and later he was in Europe. In 1864 he returned to the U.S.A. and his brain gave way. He died in New Orleans, July 10, 1884. By some Morphy is regarded as the greatest chess player of all time, and Morphy's Games of Chess, ed. J. Lowenthal, 1860, is still a classic.

**Morris, SIR DANIEL** (1844–1933). British botanist. Born at Loughor, Glam, May 26, 1844, he was educated at Cheltenham, the Royal College of Science, S. Kensington, and Trinity College, Dublin. He made a special study of the plant life of the West Indies, being director of the botanic department in Jamaica in 1879 and president of the West Indian Agricultural Conferences, 1899–1908. The successful introduction of sea island cotton cultivation into the West Indies was due to Morris, who published many books on the products of Britain's colonies in the New World. Knighted in 1903, he died Feb. 9, 1933.

**Morris, GOUVERNEUR** (1752–1816). American statesman. Born at Morrisania, New York, Jan. 31, 1752, he was descended from one of Cromwell's soldiers who had emigrated to America in 1660. His father, Lewis Morris (1698–1762), was a New York judge, his mother was of a Huguenot family, whence his Christian name.

Entering public life just when the trouble between Britain and her American colonies began, Morris was a member of the congress of his own state, and of that called by the seceding states as a whole. Until 1783 he was continually employed in the cause of the Americans. He was chairman of the committee that discussed the possibilities of reconciliation with the British representatives in 1778. A prominent member of the convention of 1787, he influenced the nature of the amended constitution, and drafted its final form.

In 1789, when the French Revolution broke out, Morris was in Paris, and he remained in Europe

until 1798, acting for two years as minister to the French republic, and at other times reporting privately on European affairs to Washington. During 1800–03 he was a member of the Senate, and was afterwards chairman of the Canal Commission. He died Nov. 6, 1816. His *Diary and Letters*, published in 1888, give an account of the outbreak of the French Revolution. *Consult* Lives, J. Sparks, 1832; T. Roosevelt, 1891.

**Morris, GOUVERNEUR** (b. 1876). American writer. Great-grandson of the American statesman, he was educated at Yale university, and became a well-known writer of adventure stories. He published his first novel, *A Bunch of Grapes*, in 1897, and later works included *Putting on the Screws*, 1909; *Yellow Men and Gold*, 1921; *Tiger Island*, 1934; *Diary of the French Revolution*, 1939.

**Morris, SIR LEWIS** (1833–1907). Welsh poet. Born in Carmarthen, Jan. 23, 1833, and educated at Sherborne School and Jesus College, Oxford, he made a name as a poet with the first series of *Songs of Two Worlds*, 1871. In 1876–77 appeared *An Epic of Hades*, which was followed by *Gwen*, a dramatic poem, 1879; *Songs Unsung*, 1883; *Gylcia*, a tragedy, 1886; *Songs of Britain*, 1887; and *The New Rambler*, 1906. Knighted in 1896, he died Nov. 12, 1907.

**Morris, MARGARET** (b. 1891). British dancer and educationist. Born in London, Mar. 10, 1891, she studied dancing under Raymond Duncan, and after appearing with Ben Greet and Benson, appeared in the London production of *The Blue Bird* in 1910. She founded her own school, and her educational theory was based on a synthesis of all the arts. In 1918 she founded a school for the general education of children, and in 1925 began the application of dancing as a remedial exercise. She was appointed a member of the National Advisory Council for Physical Training and Recreation in 1937.

**Morris, THOMAS** (1821–1908). A Scottish golfer. Born at St. Andrews, June 16, 1821, he began to play golf at six years of age. In 1851 he took over the links at Prestwick and superintended the

laying out of this course. It was while he was at Prestwick that the Open Championship was inaugurated in 1860. This was won by him in 1861, 1862, 1864, and 1867. In 1863 he was made custodian of the Royal and Ancient Golf Club at St. Andrews. On the occasion of his 75th birthday a subscription was raised which totalled £1,250. He retired in Sept., 1903, and died May 24, 1908. *Consult* The Life of Tom Morris, W. W. Tulloch, 1907.



Thomas Morris, senr.,  
Scottish golfer

**Morris, WILLIAM** (1834–96). British poet. He was born March 24, 1834, at Walthamstow and educated at Marlborough and Exeter College, Oxford. Attracted by the High Church movement, he intended to take orders; but at Oxford he rapidly passed to a deeper interest in

the arts and crafts, and the making of poetry. He met Burne-Jones, and both worshipped Rossetti from afar. Thus it came that both men, rebelling like the pre-Raphaelites against Greek academism in art, and against the Renaissance, went back to the Italian primitives and the Gothic, not realizing that the mimicry of the Gothic was just as academic as mimicry of the Greeks. Morris, fascinated by the life of the Middle Ages, spent his vigorous years in trying to replant on modern life a dead thing. More profitable was his championship of the social aims of the people.

Having £900 a year on coming of age, Morris came to London and articulated himself to Street, the architect, at whose office he met his close friend, Philip Webb. Soon thereafter he met Rossetti, but the rugged personality of Morris was too marked to become utterly enslaved; and, while Rossetti urged him to paint pictures, Morris kept a keener interest in architecture and the beautifying of things in common use. Thus early he revealed his life-thought. Just as he weighed the prosperity of a people by the state of its poor,



William Morris  
By courtesy of Emery Walker



Gouverneur Morris,  
American statesman



Margaret Morris,  
British dancer  
Elliott & Fry

not of its rich, so he judged the art of an age by its craftsmanship, rather than by its genius in easel-pictures. But it is said he erred in condemning machine-made things wholesale, instead of trying to improve their design.

Morris took rooms with Burne-Jones at 17, Red Lion Square.



Morris Dance. A figure in the old English dance, performed by the Polesworth (Warwickshire) Dancers. Above, sword dance, and boy riding a hobby horse

where he began at once the art revolution by designing furniture. In 1857 he took part in Rossetti's decorating of the debating hall of the Oxford Union with tempera paintings from the Morte d'Arthur, work which was soon wrecked by the decay of the material; it was Morris's foreground of sunflowers that started the much-chafed badge of the Aesthetes. In April, 1859, Morris married the beautiful Jane Burden. Desiring an ideal home, and finding an orchard and meadow at Bexley Heath, in Kent, he there engaged Philip Webb to build him the famous Red House. The difficulty of getting furniture to suit it led to the foundation of the firm of Morris and co., which undertook the beautifying of everything, from the wallpapers and stained-glass windows and furniture to the cups and saucers, dishes, and dog-irons.

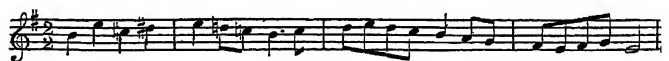
Illness soon compelled Morris to move to town; and, selling the Red House, he settled in an old house in Queen Street, Bloomsbury, in 1865. Morris was now able to devote his time to poetry again, and composed his epic, *The Life and Death of Jason*, 1867, *The Earthly Paradise*, a series of tales from Greek and medieval sources, 1868-70, and *Love is Enough*, 1872, and was soon acknowledged as a great poet. In 1871 Morris, with Rossetti, took the beautiful old house in the Thames valley called Kelmscott Manor House. The very charm of the place made him fret over the sordid lives of the workpeople.

In 1871 he went to Iceland; in 1873 to Italy; and, bored by the Renaissance, back to Iceland again.

In 1875 the Morris firm broke up, and in 1878 he went to live in his picturesque house at Hammer-smith Mall on the river's edge. He had translated the *Volsunga* saga with Magnusson in 1870; in 1876 appeared his *Sigurd the Volsung*. About 1877 Morris stepped into the arena of politics to prevent England from interfering over the Bulgarian atrocities. He was soon in the van of the Socialist movement—a movement which, as he maintained, by revolution



alone could rid the privileged classes of economic power; in 1883 he publicly declared this.



Of Morris's prose romances, the best-known are the *Dream of John Ball*, 1888, and *News from Nowhere*, 1891. Having mastered tapestries, Morris turned to printing. In 1888 he decided to print his prose romance *The House of the Wolfings*, and in 1889 *The Roots of the Mountains* in his Kelmscott Press. Then followed other prose romances, *The Glittering Plain*, *The Wood Beyond the World*, *The Well at the World's End*, *The Water of the Wondrous Isles*, and *The Sundering Flood*. He died Oct. 3, 1896. See Art; Kelmscott Press; Pre-Raphaelites.

**Bibliography.** Works, 24 vols., 1910-15; *The Books of W. M.*, H. B. Forman, 1897; *A Study in Clough, Arnold, Rossetti and Morris*, A. Stopford Brooke, 1908; *Lives*,

A. Vallance, 1897; J. W. Mackail, 2 vols., 1899; A. Noyes, 1909; A. Clutton-Brock, 1914; H. Jackson, 1926; P. Bloomfield, 1934; M. R. Grennan, 1946; E. and S. Goodwin, 1948; E. Meynell, 1948.

**Morris Dance** (Span. *morisco*, Moorish). Popular dance, said to have been ac-

quired from the Moors perhaps on the return of John of Gaunt from Spain in the reign of Edward III. In Tudor times it was well established in England as a festival dance, especially on May day, and references to it abound in English literature. Stock characters figuring in the dance around the maypole were Maid Marian (*q.v.*), frequently impersonated by a man, her paramour, her jester, Friar Tuck, a gentleman, clown, Bavarian fool, hobby-horse, and foreigners, perhaps Moriscos or Moors.

The music used for Morris dancing differs in various parts of England, and there seems to be a good deal of freedom in using old popular song tunes as well as the few undoubtedly genuine Morris tunes. The majority of the tunes are in 2-4 or 4-4 time, but 6-8 and 3-4 are not unknown. The oldest recorded Morris tune is found in Arbeau's, or Tabourot's *Orchésographie*, 1589, and runs as follows:

Some of the tunes are named after their places of origin or usage, such as the Staines Morris, beginning:

**Morrison.** Mt. of Formosa. The peak, whose altitude is variously given as 13,075, 13,945, and 14,272 ft., is the culminating point of the Niitaka range, the S. portion of the mountainous backbone of the island. The Japanese name is Niitaka-yama.

**Morrison.** ARTHUR (1863-1945). British novelist. Born Nov. 1, 1863, he became a clerk in the civil service, writing in his leisure hours. In 1890 he took up journalistic work on the



Arthur Morrison  
British author  
Russell

National Observer and elsewhere, and gained a reputation with his stories of life in the E. end of London, *Tales of Mean Streets*, 1894, and *A Child of the Jago*, 1896. Other novels include the detective stories, *Adventures of Martin Hewitt*, 1896; *Cunning Murrell*, 1900; *The Red Triangle*, 1903; *Green Ginger*, 1909. He also collaborated in the writing of three plays. An authority on Oriental art, Morrison published *The Painters of Japan*, 1911. He died on Dec. 4, 1945.

**Morrison, HERBERT STANLEY** (b. 1888). British politician. Born in Brixton, Jan. 3, 1888, Morrison



Herbert Morrison,  
British politician

was educated at an elementary school and went to work as an errand-boy at the age of 14. In turn shop assistant, telephone operator, and deputy circulation manager of a newspaper, he became secretary of the London Labour party in 1915. After being mayor of Hackney, 1919-20, he was elected to the L.C.C. in 1922, and became leader of the Socialists there; he became an alderman in 1931, and from 1934 to 1940 was leader of the council, in which capacity he was responsible for the evacuation of London children at the beginning of the Second Great War. He was M.P. for S. Hackney in 1923-24, 1929-31, and 1935-45, for E. Lewisham 1945-50, then for S. Lewisham. He was minister of Transport in the Labour government of 1929, and in 1931 became a Privy Councillor. In March, 1931, he introduced the legislation that set up the London Passenger Transport Board. Defeated at the 1931 parliamentary election, Morrison concentrated on his work in the L.C.C.; but he returned to the house of commons in 1935, and in 1940 joined Churchill's coalition government as minister of Supply. In Oct., 1940, he became home Secretary and minister of Home Security, and was a member of the war cabinet, 1942-45. In 1945 when Labour returned to power Morrison became lord president of the council and leader of the house of commons. He wrote *Socialisation and Transport*, 1933; *How Greater London is Governed*, 1935; *Looking Ahead*, 1943.

**Morrison, ROBERT** (1782-1834). British missionary. He was born at Morpeth of Scottish parentage,

Jan. 5, 1782, and in 1807 was sent by the L.M.S. as a missionary to Canton. Two years later he be-



came an official translator to the East India Company. He translated the Bible into Chinese, prepared a grammar and dictionary, and was the founder of the Anglo-Chinese College at Malacca. He died at Canton, Aug. 1, 1834.

**Morrison, WILLIAM SHEPHERD** (b. 1893). British lawyer and politician. Born Aug. 10, 1893, he was

educated at George Watson's college and Edinburgh university, and was called to the bar in 1923. After being private secretary in turn to the solicitor-general and the attorney-general, he was Conservative M.P. for Cirencester and Tewkesbury from 1929. Financial secretary to the Treasury in 1935, he was appointed minister of Agriculture and Fisheries in 1936, chancellor of the Duchy of Lancaster in 1939, minister of Food in 1939, postmaster-general in 1940, and minister of Town and Country Planning, 1943-45. During 1931-36 he was a member of the Medical Research Council and the Industrial Health Research Board. He was made a privy councillor in 1936.

**Morrison Shelter.** All-steel indoor air-raid shelter introduced in the U.K., Feb., 1941, for the protection of house occupants during air raids. Named after Herbert Morrison, then minister of Home Security, it was in the form of a table, 6 ft. long by 4 ft. high, and 4 ft. wide, the top and corner posts being of sheet steel and the sides enclosed with steel-wire mesh. During the day it was used as a table. It protected the occupants from the debris of a collapsing house, and afforded a certain amount of protection against blast. Just over a million were manufactured and supplied by the ministry of Home Security and distributed free to families with an annual in-

come below £350. It could also be purchased by others. The public had great confidence in this type of shelter, which saved the lives of countless people. See Air Raid Shelter illus.

**Morrison.** River of Ross-shire and Inverness-shire, Scotland. It rises near Loch Clunie and falls into Loch Ness at Invermoriston in Inverness-shire. Its length is 18 m. The beautiful district through which it flows is known as Glen Morrison, also spelt Moriston (see Inverness-shire). Morrison is also the name of an industrial suburb of Swansea, at one time a separate village. It has a rly. station, and is 2 m. from the town proper in a N.E. direction. See Swansea.



Morrison. The Scottish river where it descends into Loch Ness at Invermoriston

**Morristown.** Town of New Jersey, U.S.A., the co. seat of Morris co. On the Whippany river, 22 m. by rly. W. of Newark, it is served by the New Jersey and Pennsylvania and other rlys. Large estates of the wealthy surrounded the town until 1920-30, but smaller suburban homes have now largely replaced these. Settled about 1710, Morristown was incorporated in 1865. Twice during the Revolution—in 1777 and in 1779-80—it was the headquarters of Washington. Pop. 15,270.

**Morris Tube.** Rifled steel tube of .22 calibre inserted into the barrel of a .303 rifle, to permit of small bore cartridges being fired from the larger calibre weapon. It permits rifle practice to be carried out at short range. In the Royal Navy, Morris tubes are inserted into guns of all calibre to provide target practice without the expenditure of full-sized ammunition. See Musket; Rifle.

**Morse, SAMUEL FINLEY BREESE** (1791-1872) American inventor. He was born April 27, 1791, at Charlestown, Mass., and graduated at Yale, 1810. He studied art in

England with Allston and Benjamin West, exhibiting at the R.A. in 1813. Two years later he returned to New York and settled down as a portrait painter. In 1826 he was appointed first president of the national academy of design. He was interested in science and experimented in the phenomena of electricity, conceiving the possibility of using it as a means of communication, with the result that in 1835 he produced a telegraph at New York university, half a mile in length. A public exhibition of his invention in 1837 led to his association with the New Jersey firm of Vail.



S. F. B. Morse,  
American inventor

He was at first unable to interest American or European governments in his invention, but in 1843 Congress voted money for a line from Washington to Baltimore, and the first telegraph message, reading: "What hath God wrought?" was dispatched from the capital, May 24, 1844. Morse helped to introduce daguerreotyping into America, and conceived the idea of an Atlantic cable. He died at New York, April 2, 1872. *Consult Life, S. I. Prime, 1875; Letters and Journals, ed. E. S. Morse, 1914.*

**Morse Code.** System of signals for the telegraphic transmission of alphabetic letters, numerals, punct-

In 1851 an international conference compiled a code, partly from the American and partly from three other systems. This international code is now used universally for civil and military purposes. It distinguishes the letter signals by limiting the elements to a maximum of four, the numeral signals and punctuation signals being uniformly composed of five and six elements respectively. The length of the dash is three times that of the dot. When sending long lists of figures the short numerals are used. Although Morse is called the dot-and-dash system, the two symbols are not necessarily short and long in transmission. They may represent uniform needle-deflections to left and right of a median line, and in the siphon recorder used on long distance cables are printed in a continuous zig-zag from side to side. Dots and dashes are usually longer when transmitted by flag, lamp, or heliograph. *See Code; Signalling.*

**Mortagne.** Town of France. In the dept. of Orne, it crowns a steep hill, 25 m. E. of Alençon. The lofty tower of the fine Gothic church, which was built in the 15th-16th centuries, collapsed in 1890. Textiles and gloves are manufactured.

Mortagne was captured by U.S. troops on Aug. 3, 1944; but the Germans retook the town on Aug. 7, only to lose possession the same day to a counter-attack made by U.S. units. On Aug. 9, German tanks recaptured Mortagne, but were finally driven out on Aug. 12.

**Mortain.** Village of France in the department of Manche, 34 m. S.S.W. of Saint Lô. The area was the scene of heavy fighting in Aug., 1944. U.S. forces, having cleared the Cotentin pen., turned S.W. from St. Lô, took Avranches and Granville on July 31, and advanced rapidly

W. into Brittany. On the night of Aug. 6-7 the Germans made a powerful armoured counter-attack westward from the Mortain area, near the junction of the British and U.S. fronts, in the hope of reaching the coast and splitting the Allied forces. Supported by British aircraft, American infantry and armoured met and held the enemy, and in the subsequent counter-attack

prevented the German armour from disengaging while the Falaise (q.v.) gap was closing. This was the last German tank offensive but one—the last being Rundstedt's in the Ardennes (q.v.). Mortain itself changed hands several times in the fighting; it was secured by the Americans on Aug. 12.

**Mortality** (Lat. *mors*, death). Literally, the state of being mortal. It is sometimes used as a synonym for death rate, e.g. the mortality from tuberculosis is very heavy. Tables of mortality consist of figures showing the number and proportion of persons of a given age who will die each year. Bills of mortality are abstracts from parish registers showing the number of persons who died in the parish during certain periods. These were rendered unnecessary by the introduction of compulsory registration of births, marriages, and deaths. *See Death Rate; Infant Mortality.*

**Mortal Sin.** Term used in Roman Catholic moral theology for sins necessarily and immediately fatal to spiritual life unless sincerely confessed, repented of, and pardoned. Sins of a lesser degree are known as venial ones. Mortal sin has been defined as a direct and wilful transgression against some known command of God, either by omission or commission. Seven sins are reckoned as mortal or deadly, i.e. pride, avarice, lust, envy, gluttony, anger, and sloth. In the Roman Catholic Church it is held that mortal sin can only be forgiven by absolution after confession, while venial sins are forgiven by simple contrition and by a renewal of grace through Holy Communion or otherwise. *See Sin.*

**Mortar.** Mixture of fine aggregate, usually sand, and cementing material, first mixed dry and then with water. It is used for cementing together bricks, stones, and clay and concrete blocks in building construction. Lime mortar was formerly in extensive use, but has now been largely replaced by cement mortar, though if this is very rich in cement the free salts present may cause efflorescence and decay of the walling bricks or blocks. A mortar of one part Portland cement to three parts clean sand is used in walls where good strength and durability are required.

Cement-lime mortar is not so strong as cement mortar, but has certain advantages. It does not shrink very much and so crazing and cracking is avoided, and the low proportion of cement greatly

A	—	N	—	—	—	+
B	—	O	—	—	—	+ or %
C	—	P	—	—	—	= (Break sign).
D	—	Q	—	—	—	- (Hyphen).
E	—	R	—	—	—	
F	—	S	—	—	—	(Full stop).
G	—	T	—	—	—	, (Comma).
H	—	U	—	—	—	: (Colon).
I	—	V	—	—	—	Short
J	—	W	—	—	—	Long
K	—	X	—	—	—	
L	—	Y	—	—	—	
M	—	Z	—	—	—	

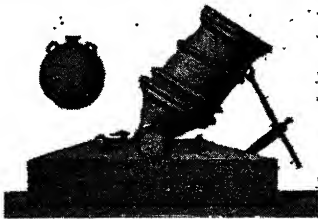
Morse Code. Alphabet, numerals, and punctuation symbols used in the United Kingdom

uation marks, and conventional phrases. The original code, devised in 1837 in collaboration with Alfred Vail, was introduced by S. F. B. Morse for use with his self-recording telegraph. A revised code, 1844, now known as American Morse, is still in local use within the U.S.A. and Canada. It allocates to the letters most frequently used the shortest signals.



reduces the risk of efflorescence. It is widely used for house walls. A suitable mix consists of one part Portland cement, one part hydrated lime or lime putty, and four parts clean sand. This mix works and spreads easily. Sand should consist of a variety of grain sizes from small to large, evenly graded. It must be clean, as any vegetable or free chemical impurities will greatly reduce the strength of the mortar, and may cause decay. Sufficient water should be used to produce a mix easily worked, but not thin enough to allow the mortar to squeeze out under the bricks or blocks. Grout is a very thin semi-liquid mortar used for filling interior spaces and fissures. It is poured, but a tube or a cement gun may be used to assist the process.

**Mortar.** Close-support infantry weapon which reached a high degree of efficiency in the Second



Mortar employed in old warfare, with large shot, which was fitted with handles for carrying

Great War. It was developed from the medieval bombard used for throwing projectiles over walls. At the siege of Constantinople in 1453 Mohammed II used bombards capable of firing stone shot weighing 1,800 lb. to a distance of 800 yds. A century later the French organized bombard companies to support their infantry. By the 16th century the bombard had developed into the mortar, firing metal shot at controlled ranges, and was essentially a cannon of large calibre and short range. After the introduction of rifled artillery in the 19th century, the mortar fell into disuse; its projectile lacked the penetrating power of a shell, and its accuracy was influenced by wind.

It was revived during the trench fighting of the First Great War, when various types were used. The earliest was a cylinder of cast iron open at one end and closed at the other, where there was a touch-hole. The bomb consisted of a tin can fitted with fragments of metal and a bursting charge. Wrapped gunpowder was dropped into the muzzle, poked with a stick to break the paper covering, and the

bomb slid in on top. A fuse was then pushed in and lit. Later the Stokes gun was introduced; the largest had a bore of 9.5 ins. and threw a 150-lb. projectile. They were inaccurate, and their ammunition, even when fired by ballistite cartridge, was always liable to premature explosion.

At the outbreak of the Second Great War the British army was equipped with a 2-in. mortar, which could fire H.E. or smoke projectiles weighing 2 lb. 2 oz. to a maximum range of 500 yds. at the rate of 20 a minute. This gave quick, close support to infantry on ground not covered by artillery observation. Its disadvantage was its short range and low destructive effect against concrete and armour.

In 1941 this was replaced by the 3-in. mortar, which had a range of 1,000 yds. and discharged a 3-lb. H.E. or smoke projectile. A standard weapon for parachute troops, it was effectively used at Arnhem. A 4.2-in. mortar was introduced in the N. Africa campaign. It had a maximum range of 2,400 yds. and could fire five 20-lb. bombs a minute. It was issued to infantry support groups. In 1943 a 6-in. mortar was developed for mounting on tanks as a close-support weapon. It was used by the Royal Engineers and first went into action during the Normandy landings on June 6, 1944.

Germany used large numbers of mortars in the Second Great War, their earlier types being similar to the British. They later introduced the mobile multiple-mortar; one of these had ten barrels. Towards the end of the war Germany had completed, but never put into service, a self-propelled mortar which weighed 120 tons and threw a one-ton projectile to a distance of 8 m. In 1943 the Luftwaffe introduced a 21-cm. mortar for use on fighter aircraft, but it was generally ineffective. The U.S. army used 12-in. mortars in defence of Corregidor (p. 7), and at the end of the war was proving a self-propelled mortar 38 ft. long which fired a two-ton projectile capable of penetrating 10 ft. of concrete at a range of four miles. Russian and Japanese mortars of the Second Great War were mostly based on German designs. The heaviest Japanese mortar, used in the defence of Okinawa, threw a projectile weighing 1,000 lb.

The 6-in. mortar mounted on tanks has a fire power equal to that of a heavy and much less mobile howitzer, and in addition, the supreme advantage of keeping pace with the advance.

**Mortara.** Town of Italy, in the prov. of Pavia. It stands on the Arbogna river, 32 m. S.W. of Milan, and is an important rly. junction, with iron works and factories for making hats, cheese, and machinery. Its old church contains some notable paintings. On March 21, 1849, the Austrians defeated the Sardinians here.

**Mortara Case, THE.** Diplomatic incident caused by the alleged abduction of a Jewish child in 1858. Edgar Mortara, son of a Bologna Jew, was baptized Jan. 24, 1858, when five or six years old, by his Christian nurse who thought that an illness was likely to prove fatal. The archbishop of Bologna thereupon claimed the child as a Christian, took him away from the parents, June 23, and concealed his whereabouts. England, France, and Prussia made representation to Pope Pius IX in 1859, but he refused to interfere, and beyond the fact that the pope himself had adopted the lad, nothing more was heard of Edgar Mortara until 1870, when the Italians entered Rome and found him in a seminary. He refused to revert to Judaism, and eventually became an Augustinian monk and an able preacher.

**Mortarboard.** Academic cap, also called cater (i.e. four-cornered cap or trencher). It consists of a



Mortarboard as worn at universities

skull cap surmounted by a stiff, square cloth-covered board and silk tassel, and derives its popular name from its resemblance to the square board with a handle used by bricklayers. It originated in the old ecclesiastical *biretum*, or barret cap, the ridged sutures of which were emphasised until it was nearly square with a flat top; this surface was enlarged and the *biretum* became the square cap of the English high churchmen of the 17th century. In the 18th century the square was stiffened with wood or cardboard and a tassel was substituted for the original ornamental knot. See Cap.

**Morte d'Arthur, THE.** Name of several works in verse and prose embodying the medieval legends of King Arthur and the Knights of the Round Table. Of these the most important is the compilation, mainly from French sources, completed by Sir Thomas Malory in 1470, and first printed by Caxton in 1485. Malory's work, of deep intrinsic interest, is remarkable for its selection and arrangement of

the more notable features of the Arthurian story, the loves of Lancelot and Guinevere, and the Quest of the Holy Grail. It is the finest extant example of 15th century English prose, a foundation stone of English prose fiction, and proved a source of inspiration to Spenser, Matthew Arnold, Swinburne, Morris, and Tennyson, whose Idylls of the King are largely based upon it. There are editions by J. Gollancz, 1900; E. Strachey, 1898, repr. 1904; E. Rhys, 1909. See Arthur; Elaine; Malory; Tennyson.

**Mortgage.** In English law, the creation in property of an interest which is to cease when a certain sum of money, usually with interest, is paid on a certain date. When the owner of land, leasehold or freehold, wishes to borrow money on the security of his land, he usually does so by mortgage.

In some mortgages—*e.g.* building society mortgages—it is intended that the borrower (mortgagor) shall repay the sum lent to the lender (mortgagee) by instalments; in others—*e.g.* where the money is lent by trustees—the mortgage is regarded as a permanent investment and it is not intended that any part of the sum lent shall be repaid until the whole of it is called in. The law of mortgages was much changed by legislation in 1925 relating to real property. Mortgages may be either legal or equitable. A legal mortgage is effected by deed in which the borrower grants a lease of the land to the lender for 3,000 years if the land is freehold, or if it is leasehold a sub-lease for some period shorter by a few days than his own lease. An equitable mortgage is effected by the borrower depositing with the lender the title deeds of the land. Both kinds may be made by a document creating a charge on the land. An equitable mortgage is mainly used where money is to be borrowed for a short time only. Any mortgage not protected by the lender taking possession of the title deeds is registrable as a land charge.

A mortgage deed usually provides that the money lent shall be repaid in six months from the date of the loan, although the parties rarely intend this to be done. After six months the borrower may still redeem the land on giving six months' notice and paying all that is due. This right is known as his equity of redemption. He loses this right when the lender exercises his power of sale or forecloses, *i.e.* applies to the court for an order that the land shall belong to him

unless the borrower repays the money within six months. The lender can sue the borrower for the money; he can enter into possession of the land; he can sell it; or he can appoint a receiver of the rents and profits.

The Rent Restriction Acts fix a standard rate of interest for mortgages on houses within the Acts, and, except where the mortgage provides for repayment of the capital by instalments spread over 10 years or more, prevent the lender from calling in the mortgage or enforcing his security except on certain grounds. See Land Laws; Rent Restriction.

**Mortification** (Lat. *mortuus*, dead; *facere*, to make). In Scots law, a gift of land made inalienably for ecclesiastical or charitable purposes. The word is also applied to lands so given, and to funds or institutions supported from the revenues therefrom. It is equivalent to the English mortmain (*q.v.*).

**Mortillet**, LOUIS LAURENT GABRIEL DE (1821–98). French anthropologist and zoologist. Born at Meylan, Isère, Aug. 29, 1821, he studied in Paris. The propaganda of a newspaper which he acquired led, after the 1848 revolution, to a sentence of imprisonment. To elude this he resided abroad, mostly in Italy and Switzerland. Work at the Geneva natural history museum induced him to study the Swiss lake-dwellings. Returning to Paris in 1864, he became in 1868 curator of the St. Germain museum. He died Sept. 25, 1898.

**Mortimer.** Famous English family. Of Norman origin, the name is taken from Mortemer, their home in Normandy. Ralph de Mortimer followed William the Conqueror to England and obtained a good deal of land in the border counties, where the name is perpetuated by Mortimer's Cross and Clebury Mortimer. In 1086, according to Domesday, he had land in eleven counties, and his successors, whose chief stronghold was first Wigmore Castle and later Ludlow Castle, were equally powerful. Roger Mortimer helped to win the battle of Evesham for Henry III, and another Roger obtained by marriage great estates in Ireland. The latter was the baron who, the lover of Isabella, helped to overthrow her husband, Edward II. In 1328 he was made earl of March and, after his death as a traitor, his title and estates were restored to his grandson, Edmund. This earl married Philippa, daughter of Lionel, duke of Clarence, and the Mortimers were thus members of

the group in whom the succession to the crown lay. The house became extinct when Edmund, the 5th earl, died Jan. 19, 1425. See March, Earl of; Wigmore.

**Mortimer's Cross**, BATTLE OF. Fought during the Wars of the Roses, Feb. 2, 1461. Mortimer's Cross is near Wigmore in Herefordshire. Edward of York, afterwards King Edward IV, was then at Shrewsbury, and the news of his father's death and the Yorkist disaster at Wakefield encouraged the Lancastrian lords to collect against him. The details of the engagement are lost, but it ended in a Yorkist victory. Owen Tudor was one of the captives executed by Edward after the battle.

**Mortlake.** Parish and district of the mun. bor. of Barnes, Surrey, England. It flanks the Thames, and has a rly. station on the Waterloo-Richmond line. The chief building is S. Mary's church. Famous chiefly as the finishing point of the Oxford and Cambridge boat race, Mortlake was at one time celebrated for tapestries, a factory, said to be the first in England, having been set up here in 1616. For centuries it has been a centre for brewing and malting. Mortlake House was long a residence of the archbishops of Canterbury. Pop. (est.) 23,850.

**Mortlake Ware.** Enamelled delft and stoneware. It was manufactured at Mortlake between 1764 and 1820. Under Wagstaffe, and then Wisker, fine landscape and figure painting was applied to punch-bowls, panels, etc. See Pottery.

**Mortmain** (Fr. *mort*, dead; *main*, hand). Term used for land that cannot be alienated owing to the fact that it is in a dead hand. In England in early times a great deal of land was given by the kings to religious corporations. This process was disliked by the great nobles, and was inequitable, mainly because, as the corporations never died, the land in question never paid the dues, which were the medieval equivalent of the modern death duties. Consequently, in 1279, a law called the statute of mortmain prohibited "any person whatsoever, religious or other, to buy or sell, or under colour of any gift, term, or other title, to receive from anyone any lands or tenements in such a way that such lands and tenements should come into mortmain."

This law was designed to check the growing wealth of the church, for a practice had grown up of conveying lands to the church, the con-

veyance being accompanied by a private bargain allowing control to remain with the grantor and his heirs, who thus avoided feudal dues. Later statutes of mortmain were designed to close the loopholes of evasion in the enactment.

Under the Mortmain and Charitable Uses Act, 1888, which repealed all the old statutes and partly re-enacted them, no land or interest in land may be acquired by a corporation except under specific licence from the crown or by virtue of some statute. See Land Laws.

**Morton, EARL OF.** Scottish title borne since 1458 by a branch of the family of Douglas. One of the family, James (d. 1430), was called lord of Dalkeith, and his descendant, another James, was made Lord Aberdour and earl of Morton in 1458, the year when he married Joan, daughter of King James I. The 3rd earl had no sons, but his daughter married a Douglas who became the 4th earl and figures in history as the regent Morton. Upon his execution the earldom was given to a Maxwell, but later the earldom was restored to a Douglas.

William, earl of Morton in the time of Charles I, was lord treasurer of Scotland. To obtain funds for the king's cause, he sold Dalkeith to the Scott family, obtaining a grant of the islands of Orkney and Shetland. This was contested, but the islands were kept by the earls until about 1750, when they were sold to Baron Dundas, ancestor of the marquess of Zetland. James (d. 1768) became president of the Royal Society. The eldest son of the earl is known as Lord Aberdour. The numbering of the earls is uncertain, but Sholto Charles John Hay Douglas (b. April 12, 1907), who succeeded his grandfather in 1935, is usually described as the 21st earl. See Douglas.

**Morton, JAMES DOUGLAS, 4TH EARL OF** (c. 1526-81). Scottish statesman. A son of Sir George Douglas, he married Elizabeth, daughter of the 3rd earl. In 1553 he succeeded to the title and estates, and was made lord chancellor in 1563, and was one of those



4th Earl of Morton  
Scottish statesman

who arranged the murder of Rizzio. He was largely responsible for the defeat of Mary Queen of Scots, at Langside. In 1572 he was made regent of Scotland, and after a

short period of enforced retirement, he recovered his influence over the young king, retaining power until 1580, when he was accused of having shared in the murder of Darnley. Found guilty, he was put to death by the maiden (q.v.), his own invention, June 2, 1581.

**Morton, HENRY VOLLAM** (b. 1892). British journalist and author. He was born July 26, 1892, and, after working on the Birmingham Gazette, 1910-12, he became a sub-editor on the Daily Mail, later transferring successively to the Evening Standard (1919), Daily Express (1921) and Daily Herald (1931). Between 1925 and 1940 he published a series of travel books: The Heart of London, In Search of England, In Search of Scotland, In Search of Ireland, In Search of Wales, In the Steps of the Master, etc., all highly popular.

**Morton, JOHN** (c. 1420-1500). English prelate. Born in Dorset, he was educated at Cerne Abbey, and at Balliol College, Oxford. He was active on the Lancastrian side in the Wars of the Roses. After the battle of Tewkesbury, Morton submitted to Edward IV, and in 1473 he was made master of the rolls, in 1479 becoming bishop of Ely. He was imprisoned by Richard III, but escaped and joined the exiled Richmond, the future Henry VII, in Flanders. After Henry obtained the crown, he made Morton archbishop of Canterbury and lord chancellor. Created a cardinal in 1493, he remained the king's chief counsellor until his death at Knole, in Kent, Sept. 15, 1500: His name is perpetuated by Morton's Dyke, which he built from Wisbech to Peterborough, and by Morton's Fork, a fiscal device for extracting money from both rich and poor.

**Morton, JOHN CAMERON ANDRIEU BINGHAM MICHAEL** (b. 1893). British writer, known as J. B. Morton, also famous as "Beachcomber." Educated at Harrow and Worcester College, Oxford, he published his first book, The Barber of Putney (a war novel), 1919. In 1924 he began to write the satirical by the Way feature in the Daily Express, inventing the imaginary public school Narkover and the popular character Mr. Thake. Morton's many books include historical studies, e.g. The Bastille Falls, 1936; The Dauphin, 1937; Saint-Just, 1939.

**Mortuary** (late Lat. *mortuarium*, from *mortuus*, dead). In the modern meaning of the word, a place for the reception of dead bodies, pending burial. Every

sanitary authority in London must provide a mortuary and every local authority and parish must also do so if required by the ministry of Health.

**Morvan, LE.** Mountain dist. of France, lying in the depts. of Nièvre, Côte-d'Or, Yonne, and Saône-et-Loire. The chain of hills, with Bois-du-Roi (2,960 ft.) and Mt. Beuvray (2,690 ft.) as its chief points, is mostly of gneiss and granite formations, and is covered with beech and chestnut forests.

**Morveau, LOUIS BERNARD GUYTON DE** (1737-1816). A French chemist. He was born Jan. 14, 1737, at Dijon, and was avocat-général to the parlement of Dijon, 1755-82, also teaching chemistry there for 15 years. In 1772 he published his Digressions Académiques. The following year he introduced fumigation as a safeguard against contagion. In 1782 he began, with Lavoisier and others, the great work on chemical nomenclature, the first volume of the Dictionnaire de Chimie being published in 1786. Elected to the Convention, 1792, he voted for the death of Louis XVI, and became a member of the committee of public safety. He died Jan. 2, 1816.

**Morvi.** State and town of India in the Machhu Kautha district. The state was in the Western India agency until the 1947 partition of India. Its area is 942 sq. m. The town is 35 m. from Rajkot, on the bank of the Machhu, where the river is bridged. Pop.: state, 141,761; town 23,600.

**Mosaic** (Low Lat. *musaicus*, belonging to the Muses, artistic). Term applied (1) to the tessellated work in ancient Roman pavements, and (2) to classical and medieval decorations executed with inlaid cubes of various stones, metals, and glass. Mosaic was derived from Hellenistic art. Its principal use in Roman times was to imitate coloured woollen carpets spread on pavements. The early Christians, searching for a technique capable of producing images resplendent in light and colour, found it in mosaics of melted coloured glass and squares of gold. In the Constantinian period inlaid marbles of various sizes (*opus sectile*) and fragments of marble and hard stone (*opus alexandrinum*), put together so as to form a geometrical design, were largely employed for mural decoration.

As the technique was enriched by the addition of glass and enamel, the art was no longer confined to geometrical patterns, but took the place of pictorial fresco decora-

tion. These pictures in mosaic were entirely restricted to the interiors of Constantinian basilicas; it was not until the 12th or 13th century that they began to appear on the façades. Fine interior mosaics of the 4th and 5th centuries are preserved in S. Maria Maggiore and the baptistery of S. John Lateran at Rome and in the churches at Ravenna. In the baptistery of the Orthodox at Ravenna the mosaics of the cupola and drum are esteemed the most complete and best preserved of all baptistery mosaics. Those of S. Mark's, Venice, are also notable. The remains of fine medieval mosaics are to be seen on the shrine of the Confessor, Westminster Abbey.

In all Byzantine architecture (*q.v.*) mosaic is the recognized decoration for walls, ceilings, or pavements. The pieces were laid on a ground of fresh stucco of lime and marble dust of such consistency and firmness that when dry



the first skeleton was discovered at St. Petersburg on the Meuse. Somewhat similar to a snake in appearance, with strong paddles, it attained a length of 40 ft. Numerous specimens have been found in the Cretaceous deposits of Europe and N. America.

**Mosaylima** OR **MOSAILIMA** (d. 643). Arabian prophet. Of the Beni-Henifah tribe, from Yamama, he was contemporary with Mahomet and was already known for his piety when the prophet began his



**Mosaic.** This example from ancient Pompeii, representing a dog, with the warning *Canem, beware of the dog*, is now in the National Museum, Naples. The upper picture shows a section of the modern mosaic pavement in the National Gallery, London, the work of a Russian artist Boris Anrep. The whole pavement depicts the activities of mankind: this part represents farming

the mosaic could be polished smooth. Mosaic was impervious to water, wind, and sunshine. The modern practice is restricted, though there are fine examples in the dome of S. Paul's Cathedral, in the chapels of Westminster Cathedral and (by Brangwyn) in S. Aidan's church, Leeds. *See Art; Byzantine Art; Justinian; S. Mark's.*

**Mosaic Diseases.** Diseases of plants which result in the mottling or streaking especially of the foliage with yellow, white, or abnormally dark green areas. Additional symptoms such as crinkling, curling, and blistering are common, and necrosis may occur. The diseases are due to the presence of a virus (*q.v.*), which in size is on the borderline of microscopical visibility. Such viruses are known in many instances to be communicated to the plant by insects such as

teaching. His claims to divine inspiration and vocation as a leader of the people were repudiated by Mahomet, and when Mosaylima set up a rival sect, he was killed in battle by Khalid and his sect almost extinguished.

**Moschatel** (*Adoxa moschatellina*). Perennial succulent herb of the family Caprifoliaceae. It is a native of Europe, N. Asia, and N. America. It has a tuberous, creeping rootstock, from which in early spring arise the obscurely four-angled stems, each with only two leaves, which are divided into three-lobed leaflets. The stem ends in a squarish head of five small



**Moschatel.** Foliage and flower head of this succulent herb

green flowers, which have a musky odour, whence the plant derives its name. Juicy, green berries follow.

**Moscheles**, **IGNAZ** (1794-1870). Bohemian composer and pianist. Born at Prague of Jewish parents,

white flies, leaf hoppers, aphids, beetles, and thrips, in the bodies of which they may persist in an active condition for considerable periods. *Consult* Recent Advances in the Study of Plant Viruses, K. M. Smith, 1933.

**Mosasaurus** (Lat. *Mosa*, the Meuse; Gr. *sauros*, lizard). Extinct marine reptile, so called because



Ignaz Moscheles,  
Bohemian com-  
poser

servatoire. He died there, March 10, 1870. Moscheles played as well as taught the piano, and was a great favourite in London, where he last appeared in 1865.

**Moschus** (2nd century B.C.). Greek poet. Born at Syracuse, he became a pupil of the grammarian Aristarchus of Samothrace at Alexandria. Neither he nor Bion (q.v.) is really a bucolic poet, although they are generally so described. Of two extant poems attributed to him one is a mytho-

logical epic on the Carrying off of Europa by Zeus in the form of a bull. The Lament for Bion is now considered to belong to a much later date.

**Moscicki, Ignace** (1867-1946). Polish president and scientist. Born in Warsaw, he became a professor of electro-chemistry at Lwow in 1912, and organizer of a chemical research institute at Warsaw, 1920. A distinguished scientist with over 600 patents to his credit, he discovered the whirling arc method of recovering nitric acid from free nitrogen. Elected to the Polish diet in 1922, he was a close friend of Pilsudski, and assumed the presidency at the time of Pilsudski's *coup d'état* in 1926, holding it until the fall of Poland in Sept., 1939. He then went with the government to Rumania, where he resigned the presidency. Moving to Switzerland, he died there Oct. 2, 1946.

1935, which stipulated that the total pop. of the capital should not be allowed to rise above 5,000,000, was the blueprint which has made Moscow what it is. It laid down that the essential shape of the city, with its concentric semi-circular streets and thoroughfares, should be maintained, but that within the older parts slum clearance and other improvements should be carried out. At the same time, the city's area was gradually to be doubled, the main extensions being planned in the south-western direction beyond the Lenin hill. Huge blocks of flats, clubs, hospitals, and schools, government and administrative buildings, were to be constructed, gardens and squares were to be laid out, and a green belt with a depth of 10 km. (6½ m.) was to be created around it. Moscow's water, gas, and electricity supplies, telephones, street and river traffic, rly. termini, slaughterhouses, cold storage, bakeries, sanitation, health services, etc. were to be completely reorganized.

#### The New Moscow

During 1935-37 an imposing proportion of these projects was completed. The first line of Moscow's luxurious underground rly., or Metro., with its marble-halled stations, was opened to traffic in 1935; bus, trolley-bus, and new tramway lines were created; the Moscow-Volga canal and seven new wide bridges over the river Moskva were completed; granite-faced quay-sides along the river with new broad riverside drives were built; new streets and avenues were cut, and old ones were transformed. Okhotny Ryad (Hunters Row), formerly a narrow slum, is now a broad avenue with some of Moscow's most imposing buildings, e.g. the house of peoples' commissars and the hotel Moskva. Other outstanding new buildings, spread about the city, include the central theatre of the Red army, the palace of culture, the Lenin library (next to the well-preserved 18th century Pashkov house, where the Rumyantsev museum and public library used to be), the Tchaikovsky concert hall, the office of Pravda, and the Stalinets stadium. Every known style has been tried—from the severely classic to the glass, cement, and metal box style. The most ambitious and at the same time the oddest structure, the Palace of Soviets, will, when completed—including a 328 ft. high statue of Lenin in stainless steel on top of it, 1,365 ft. high—compare with

## MOSCOW: CAPITAL OF THE U.S.S.R.

George Solov'yechik, Author of Russia in Perspective

*The history, monuments, and physical characteristics of the ancient city, first capital of Russia and capital again since 1918, are here described. See also Kremlin; Moscow-Volga Canal; Red Square, etc.*

Moscow (Russ. *Moskva*), which celebrated its 800th anniversary on Sept. 7, 1947, became the capital of the Union of Soviet Socialist Republics, Dec. 30, 1922, and of the Russian Socialist Federal Soviet Republic, March 11, 1918. It is also Russia's intellectual, artistic, religious, commercial, industrial, and transport metropolis and the headquarters of the All-Russian Communist (Bolshevik) party. It was the seat of the Third (Communist) International (Comintern) from its foundation in March, 1919, to its dissolution in May, 1943. The Lenin mausoleum has made it an ideological and national shrine in a way unprecedented in the country's history.

Like Rome, Moscow lies on seven hills, 500-800 ft. in altitude, of which the best known is the former Sparrow hill, renamed Lenin hill. The city covers a large and almost circular area and is traversed from W. to E. by the winding river Moskva, a trib. of the Oka which flows into the Volga at Gorky (formerly Nijni Novgorod). In 1937 another direct link with the Volga was created through the completion of the Moscow-Volga canal, which not only solved the perennial problem of the city's water supply by replenishing the inadequate stream of the Moskva, but also turned Moscow into an important port for

goods and passenger traffic. The Soviet capital now has direct water routes to the Caspian, the White, and the Baltic seas; a projected canal from Stalingrad to the river Don will provide a connexion with the Black Sea.

The Moscow of today is a curious and in many ways wholly unharmonious mixture of 20th century structures and installations with the quaint old buildings and other characteristic landmarks of the ancient city, which, having established its ascendancy over the other principalities, was the capital of the Great Princes of Muscovy and then of the Russian empire from the 14th century until 1712, when Peter the Great made his new city of St. Petersburg the capital of his Europeanised realm (see Leningrad).

Moscow had a pop. (1939) of 4,137,018, twice that of 1926, three times that of 1917. Except for a serious setback in the early days of the Soviet regime, the growth of the pop., which passed the 1,000,000 mark at the turn of the century, has been constant. The city is divided into 23 administrative dists., of which the largest in area is the October dist., while the Kuibishev and the Sverdlov are most densely populated.

The comprehensive general plan for the reconstruction of the city of Moscow, adopted on July 10,





Moscow. Plan of the central districts of the capital of the U.S.S.R.

the 1,250 ft. of the Empire State building in New York.

The palace of soviets is to occupy the site of the former church of Christ the Saviour, an unattractive monument to the Napoleonic war of 1812, erected in 1837-1838 by the German architect Constantine Thon, and pulled down by the Soviets. Large-scale demolition of many old buildings, as well as the disappearance or renaming of well-known streets and squares, has been the inevitable consequence of this vast reconstruction programme. Thus the famous chapel of the Iberian Mother of God—the most venerated religious shrine in the city—has been demolished and the icon itself moved to the church of the Resurrection, where the election of the present Patriarch, Alexis, also took place in 1946. Moscow used to count some 600 churches. Of these, c. 50 have been reopened for worship; a few particularly precious monuments of Russian architecture have been transformed into museums; a substantial number are used as clubs, schools, libraries, cinemas, or flats; and many have been pulled down.

Most of the new street names are either those of famous Bolsheviks and outstanding events of the Revolution, or of Russia's foremost writers, e.g. Tolstoy, Chekov.

The former Vozdvizhenka Street was renamed Comintern Street, until the Comintern was suspended in 1943, when it became Kalinin Street. Among old street names surviving the best known are Kuznetski Most, Petrovka, Spasskaya, Sretenka, and Tverskoi Boulevard. Moscow's most famous historical landmark, the Kremlin (*q.v.*), has been restored and its ancient treasures cleaned.

#### The Kremlin

Archaeologists have not traced the name Kremlin to any definite source, but it is known that Prince Yury Dolgoruky, who founded the city in 1147, built his first fortification on the present site in 1156, and called it the Kremlin. Ivan I (1328-1341), under whom Moscow became the acknowledged metropolis of the then Russian state, enclosed his city with walls of oak, which were replaced by masonry in 1367, and strengthened by a moat in 1394. At the close of the 15th century, under Ivan III, when the state of Muscovy and its capital were being rapidly expanded and modernised, Italian masters built the new Kremlin fortifications in brick. These walls have survived for the most part to the present, and with their subsequent extensions are 7,280 ft. in circumference, have 18 towers and five gates. Most of the buildings within the Kremlin have survived

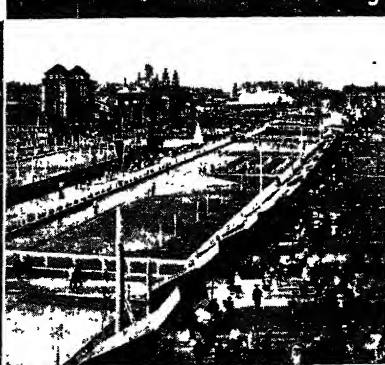
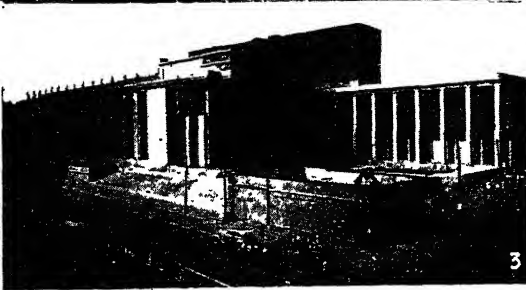
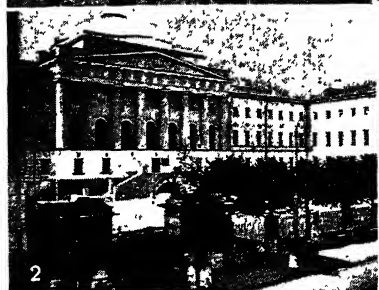
the frequent fires, riots, and foreign invasions which have ravaged the city.

The last occasion when foreign invaders set foot in "the mother of Russian towns" or "the holy city," as Moscow is sometimes called by the Russians, was in 1812 when Napoleon and his troops were there from Sept. 14 to Oct. 10; but then Moscow was deliberately burnt down by her own people; three-quarters of her houses and half the churches were lost in the great conflagration. However, the city was rebuilt with astonishing speed, and much embellished in the process. Towards the end of the 19th century it became Russia's industrial and commercial centre, the wealthiest and the most nationally-conscious city in the realm. Her rich merchants became great patrons of the arts, presented Moscow with museums, libraries, and picture galleries, endowed theatres and institutions of learning, hospitals, and innumerable other foundations. But the rarest art treasure remains the Kremlin itself, wherein the Terem and the Granovitaya Palata, 15th century reception halls of the tsars of Muscovy, are still being used.

Next to the Kremlin, and originally also enclosed by a wall, is a district called, for no discoverable reason, Kitai Gorod (Chinese City), the best-known landmarks of which are the Red square (so called long before the revolution; since 1924 it has contained the Lenin mausoleum) with the picturesque cathedral of Vasily Blashenny (S. Basil the Beati-fied) at its S. end, built in 1554 by the Russian masters Barma and Postnik; the monument to Minin and Posharsky; and the ancestral home of the Romanovs—an instructive illustration of Russian boyar life in the Middle Ages. Embracing the Kremlin and Kitai Gorod (which since c. 1880 has become the business centre of Moscow), and shaped like a shoehorn, is Byely Gorod (White City) and, beyond it, as a still larger semi-circle, Semlyannoy Gorod (Earthen City), while across the river lies the dist. of Samoskvoretchye (beyond the river Moskva). These five ancient dists. constitute the actual city, to which several suburbs have been added.

Here are some memorable dates out of Moscow's history:

1325, the Metropolitan of All Russia made Moscow his official seat. 1404, Moscow had its first striking clock. 1564, Moscow had



1. Red Square : in the middle distance is the cathedral of S. Basil, founded by Ivan the Terrible, 1554. 2. The University. 3. Lenin Library. 4. Komsomol Square, showing October railway station on left, the underground station next to it, and Northern railway station on right ; in right foreground is seen a corner

of Kazan railway station. 5. The great Palace of the People's Commissariat of Health. 6. Sverdlov Square with Ochotny Ryad underground railway station in left foreground, and Bolshoi Theatre in centre. 7. Gorki Park of Rest and Culture ; it has cinemas, library, restaurant, billiards rooms, sports grounds, etc.

**MOSCOW : VIEWS AND BUILDINGS IN THE CAPITAL OF THE U.S.S.R.**

its first printing press. 1589, first Patriarch elected (lapsed 1700, restored 1917 and 1943). 1613, first Romanov (Michael) elected Tsar. 1689, first stone bridge built. 1703, first newspaper in Russia. 1755, first university in Russia, inaugurated Jan. 12, day of S. Tatiana, who became its patron saint. 1812, occupation by Napoleon and Great Fire of Moscow. 1824, Bolshoi (Great) Imperial Theatre of Opera and Ballet built. 1838-49, great Kremlin palace rebuilt on ancient foundations. 1851, Moscow joined to St. Petersburg by rly., the second in Russia. 1861, liberation of the peasant serfs, which completely transformed Moscow's economic position. 1861, Rumyantsev museum and library moved to Moscow from St. Petersburg. 1892, the brothers Tretyakov, wealthy Moscow merchants, presented to the city their unique picture gallery of Russian masters. 1898, Moscow Arts Theatre, world famous dramatic company, founded by Stanislavsky and Nemirovitch-Danchenko. 1905, violent risings during the revolution. 1918, Lenin moved the capital to Moscow.

**Moscow Declaration.** Signed in Moscow by representatives of the U.K., U.S.A., U.S.S.R. and China, Oct., 1943, this was the first step in the creation of the United Nations organization. It declared that their countries would continue for the maintenance of peace the united action they had pledged for the prosecution of war against their various enemies, and to that end would inaugurate a system of security. See United Nations.

**Moscow Trials.** Name used to describe certain trials held in Moscow in 1933, 1936, and 1937. In March, 1933, six British employees of Metropolitan-Vickers, M. Monkhouse, W. H. Thornton, J. Cushny, W. H. MacDonald, C. Nordwell, and A. Gregory, were arrested by the Russian secret police and committed to prison charged with unspecified acts of sabotage in connexion with electrical works being carried out under contract in Russia by their firm. Following unsuccessful representations for their release to the Kremlin by the British embassy in Moscow, the British govt. broke off current negotiations for a new Anglo-Soviet trade agreement, and on April 5 brought in a bill to impose an embargo on Russian imports into Great Britain.

On April 12, the Britons were brought to trial, and all pleaded not guilty except MacDonald, who, however, during the first day's hearing retracted his plea of guilty, but after an interview with the O.G.P.U. guards again

pleaded guilty. The prosecution then put in an alleged confession by Thornton, which the latter disowned as having been extracted under moral pressure. On April 18, the court sentenced Thornton to three years', MacDonald to two years' imprisonment; Monkhouse, Cushny, and Nordwell to deportation. Gregory was acquitted. Mutual embargoes on trade were enforced by the British and Russian govts.; but negotiations between Litvinov and Sir John Simon led to the release of the British prisoners on July 1, and their deportation. Both countries lifted their import embargoes preparatory to negotiating a fresh trade treaty.

In August, 1936, a group of Communists, including Kameniev and Zinoviev, ex-chairman of the Communist International, were arrested and tried in Moscow on a charge of assisting the exiled Trotsky to negotiate with Germany for help against Stalin in return for the cession of the Ukraine. Although the prosecution was unable to bring evidence substantiating the charges, the prisoners, who had vied with each other in confessing their alleged misdeeds, pleaded guilty and were executed. In Feb., 1937, a second group of 17 Communists, called the Trotskyite-and-Right-Wing Bloc, were tried on similar charges; 14 were sentenced to death. Three months later eight high-ranking officers of the Soviet army, arrested and tried in camera on charges of conspiring with the German general staff, were shot.

**Moscow-Volga Canal.** Artificial waterway of the R.S.F.S.R., 80 m. in length. Started in 1933 under the second five year plan, it was opened to traffic May 2, 1937. It connects the Volga and Moskva rivers, so that shipping from the Caspian, Baltic, and White seas can reach Moscow.

There are 11 locks for the raising and lowering of ships in transit, while 11 dams increased the depth of the Moskva river and tributaries, previously scarcely navigable. The reservoir formed by the dams increased Moscow's water supply by 50 galls. daily per head of pop., while the overflow drives 8 generating stations. To make way for the canal the inhabitants of 203 settlements with 40,000 buildings on the route, were moved to new centres.

**Moseley.** Suburb of Birmingham, England. It comprises the ecclesiastical districts of St. Anne and St. Mary in the S. of the city.

**Moseley, HENRY GWYN JEFFREYS** (1887-1915). British physicist. Born in 1887, he was educated at Eton and Trinity College, Oxford. Appointed a lecturer in Rutherford's laboratory at Manchester university, he later became a John Harling fellow there before going to Oxford. His work in radio-activity resulted in a series of brilliant researches proving the existence of a single relationship between the X-ray spectrum of an element and its atomic number. This established a new and valuable method of chemical analysis which solved the outstanding problems of atomic structure and spectral lines. Moseley was killed in action in Gallipoli, Aug 10, 1915, while serving with the Royal Engineers.

**Moselle.** Delicate, aromatic wine, generally of the white variety. It has a low percentage of alcohol, and is made from grapes grown in the lower valley of the Moselle. Unlike most wines, Moselle does not improve by keeping. It is either still or sparkling. The latter is distinguished by a pronounced grape flavour, and is one of the lightest of effervescing wines.

**Moselle** or **MOSEL**. River of France and Germany. It rises in the S. Vosges, near Bussang, and flows in a N.W. direction into Lorraine. At Toul it turns N., skirts Luxemburg, and passes into Germany, following a winding course to the N.E. until it reaches the Rhine at Coblenz. Its chief tributaries are the Vologne, Meurthe, Seille, Orne, Sarre, and Kyll, and the chief towns on its banks are Remiremont, Épinal, Toul, Pont-à-Mousson, Metz, Thionville, Trèves, Berncastel, Cochem, and Coblenz. Its length is 320 m.

**Moselle.** Dept. of N.E. France. It is bounded N. and N.E. by Luxemburg and Germany, E. and S.E. by Bas-Rhin, S. and W. by Meurthe-et-Moselle, and consists chiefly of a low plateau drained by the river Moselle. There are important coal and iron mines, and the chief industries include salt working, metal founding, and cement making. Manufactures include machinery, chemical products, textiles, boots and shoes, pipes, and paper. The Moselle valley is famous for vineyards. The dept. has 9 arrondissements, 36 cantons, and 763 communes. Metz is the capital. Moselle is coterminous with the province of Lorraine ceded by France to Germany in 1871 and restored in 1919. Area, 2,403 sq. m. Pop. 696,246. For history, see Lorraine.

**Moses.** Hebrew law-giver and leader of the Israelites from Egypt. Son of Amram, a Levite, and Jochebed, and younger brother of



Moses. Sculpture representing the law-giver of Israel, by Michelangelo. Church of S. Pietro in Vincoli, Rome

Miriam and Aaron, he was adopted by Pharaoh's daughter, and brought up as an Egyptian prince. According to the Biblical narrative (Exodus-Deut.), after slaying an Egyptian taskmaster who had ill-treated an Israelite, he fled to Midian, and married Zipporah, daughter of Jethro, a shepherd. At Mt. Horeb he received a Divine command to return to Egypt, from which he later led the Israelites to the confines of Canaan, receiving the Decalogue from Jahveh, at Mt. Sinai. After glimpsing the Promised Land from Pisgah, he died at the age of 120 years, leaving two sons, Gershom and Eliezer. He was buried in an unknown grave.

By a late Jewish tradition, Moses was thought to be the author of the Pentateuch, a work now usually regarded as the product of several compilers from older documents, only parts of it being definitely ascribed to Moses. Moses figures largely in the Koran, in Islamic legend, and in the pages of Josephus. See Aaron; Decalogue; Exodus; Pentateuch.

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**Mosheim, JOHANN LORENZ VON** (1694-1755). German historian. He was born at Lübeck, Oct. 9, 1694, and became professor of the theology at Helmstedt, Brunswick, in 1723. In 1747 he was appointed

professor of divinity and chancellor of Göttingen university. He died Sept. 9, 1755. His *Institutiones Historiae Ecclesiasticae*, 1726, the work which established his fame, was translated into English by A. Maclaine, 1764, and again in 1832, by J. Murdock (new edition, 1892).

**Moskva.** River of central Russia, a tributary of the Oka. It rises in the Moscow region, flowing E. and then S.E., joining the Oka below Kolomna, after a course of 300 m. The battle between the French and the Russians, called the battle of Borodino (*q.v.*) was fought along it, Sept. 7, 1812.

**Moslem.** The spelling favoured in this Encyclopedia is Muslim. See Mahomedanism; Muslim League.

**Mosley, SIR OSWALD ERNALD** (b. 1896). British politician. Born Nov. 16, 1896, son of Sir Oswald

Mosley, Bart., to whose title he succeeded in 1928, he was educated at Winchester and Sandhurst and commissioned in the 16th Lancers. In 1918 he was Conservative M.P. for Harrow, but left the party and sat as an Independent, 1922-24. In 1924 he joined the Labour party. Defeated at the 1924 general election, he became M.P. for Smethwick, 1926, and was chancellor of the duchy of Lancaster, 1929-30. In the latter year, contemptuous of what he considered the "spineless apathy" of the Socialists, he founded the New party; but was defeated at the general election of 1931, as was every New party candidate; and, when it became clear that he was increasingly inclining towards fascism, the party broke up. Almost at once he formed the British Union of Fascists. He visited Italy to study fascism at first hand, and adopted as his own much of the Italian party's manners and methods, e.g. a black-shirted uniform. Mosley's policy included a virulent anti-Semitism, and his supporters earned notoriety for their violent and provocative actions. He opposed the waging of war against Germany in 1939, and in May, 1940, he was arrested under the Defence Regulations and imprisoned first in Brixton jail, and from 1941, with his wife, in Holloway jail, until his release in Nov., 1943, on the grounds of health; he was suffering from thrombo-phlebitis. After the war



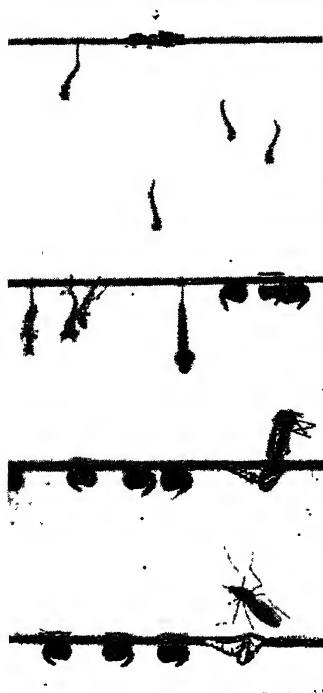
Sir Oswald Mosley, British politician

he founded Mosley Publications Ltd. as a basis for further political activity, but, discredited in the eyes of the public, he gained no considerable support. His book *My Answer*, 1946, formulated his later political ideas, and in Feb., 1948, he announced the formation of a new Union movement, designed to unite 51 organizations.

Mosley married, in 1920, Lady Cynthia Blanche Curzon (1898-1933), the daughter of Lord Curzon of Kedleston. She was Labour M.P. for Stoke in 1929, and followed her husband when he formed the New party. She died May 16, 1933. In 1936 Mosley married the Hon. Diana Guinness, a daughter of the 2nd Baron Redesdale (*q.v.*).

**Mosque** (Arabic, *mesjid*). Mahomedan place of worship. Noteworthy examples are at Cairo, Delhi, Mecca, Medina, Jerusalem, Damascus, and in various parts of India. In the U.K. there are mosques at Woking, Surrey; Southfields, London; and Cardiff. Varying in form in different countries, mosques generally have a central dome, minarets, and a court provided with a tank for ceremonial ablutions. Within is a pulpit, a lectern, a niche indicating the direction of Mecca, and carpets, but no seats. The interior decoration is restricted to arabesques and texts from the Koran. See Arabia; Cairo; Damascus; Delhi; Mahomedan Art and Architecture.

**Mosquito** (Span. diminutive of *mosca*, a fly). Name given to species of blood-sucking flies of the family Culicidae or gnats. They closely resemble midges (*q.v.*) in appearance but are distinguished by their piercing mouth-parts and the presence of scales on the body, wings, and other appendages. In their early stages they are aquatic, usually in fresh water, and less often in saline or brackish waters. The eggs float, either singly as in *Anopheles*, or in compact masses or rafts as in *Culex*. Mosquitoes occur all over the world but are most abundant in the tropics. About 2,000 species are known, and of these 29 kinds occur in Great Britain. The blood-sucking habit is confined to the females, the males largely feeding on plant juices. Many species of *Anopheles* act as carriers of the pathogenic organism causing malaria and in Europe *Anopheles maculipennis* is of great importance in this. The malarial parasite is conveyed to the female mosquito when she sucks the blood of an infected person. The parasite finds its way into the walls of the insect's stomach where



Mosquito. Stages in development. 1. Egg-rafts and half grown mosquito larvae diving. 2. Full grown larvae breathing at surface of water. Moulded larvae skins on left, active pupae on right. 3. Mosquito emerging from pupa skin on surface of water. 4. Mosquito fully emerged and ready for flight

it multiplies, forming large cysts. The latter rupture, and liberate the parasites into the body-cavity. They then make their way to the salivary glands. When a mosquito punctures the skin the parasites enter the blood with the saliva, infecting a person with malaria.

Other species of mosquito, in special *Aedes aegypti*, are carriers of the virus of yellow fever from infected to uninfected persons. The disease of elephantiasis is due to minute filarial worms disseminated by the mosquito and particularly by the species *Culex fatigans*. Various measures for controlling mosquitoes are practised. The elimination of standing water and the drainage of marshes destroy breeding places. The spraying of ponds and ditches with kerosene, or oil mixtures, which spread as a thin film, kill the larvae when they come to the surface to breathe. Larger areas, when dusted with finely powdered arsenical compounds discharged from aeroplanes, become freed of mosquitoes. The introduction of fishes known to feed on mosquito larvae is a further

measure. See Malaria: Yellow Fever. Consult British Mosquitoes, J. F. Marshall, 1938; Insects of Medical Importance, Smart, 1943.

**Mosquito.** Type of military aeroplane designed by the De Havilland Aircraft Co., Ltd., as the D.H.98 for service with the R.A.F. in the Second Great War. Originally an unarmed high-speed light bomber, it was later used as a night fighter, fighter-bomber, and photographic reconnaissance machine. A modified type was employed for transport and as the Sea Mosquito for naval work. The basic structure was entirely of wood, for ease of manufacture; furniture-makers and other sub-contractors were introduced to step up production, and by the end of hostilities over 8,000 Mosquitoes had been delivered. Despite its size (wing span 54 ft. 2 ins., crew of two), the Mosquito was the first standard R.A.F. type to have a maximum speed of over 400 m.p.h. The final operational version (Mark 34), powered by two 1,625 h.p. Rolls-Royce Merlin engines, had a maximum speed of 425 m.p.h. and an extreme range of 3,500 miles. See Aeroplane illus., p. 129.

**Mosquito** (native form, *Missquito*). Tribe of Central American Indians. They inhabit the E. coast of Nicaragua, thence known as the Mosquito Coast. They are exceptionally intelligent, and speak a Sumo dialect. Their dark colour is attributed to intermarriage with shipwrecked negro slaves.

**Mosquito Coast** or **LA MOSQUITIA**. Maritime region of Central America. It embraces the S.E. coast of Honduras, and the E. coast of Nicaragua. It fronts the Caribbean Sea, is low lying, and contains several lagoons, the largest being Caratasca in Honduras and Pearl Cay in Nicaragua.

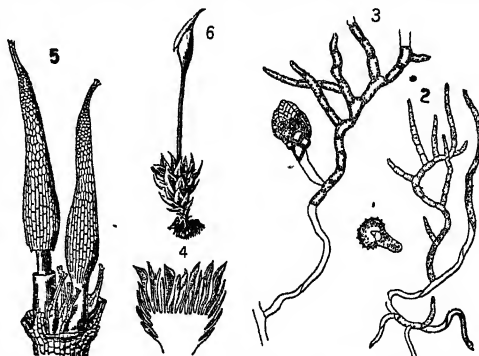
The Mosquito Territory or Reserve, wholly in the latter republic, now forms the dept. of Bluefields. It is inhabited chiefly by Mosquito and Zambo Indians, with negroes from Jamaica. The region was a matter of diplomatic controversy between the U.S.A. and Gt. Britain, but under the

treaty of April 19, 1905, the U.S.A. acknowledged the claims of Nicaragua, and withdrew.

**Moss** (*Musci*). One of the two classes of Bryophyta, the other class being the Hepaticae. Bryophyta come in systematic botany between Thallophytes and Pteridophytes. Like Thallophytes (algae, fungi, diatoms, etc.), their structure is simple, there being neither vessels nor woody tissue, though they have conducting cells which to some extent serve the purpose of vessels. They have stems, which are clothed with simple leaves which differ essentially in form and internal structure from the foliar organs of the flowering plants.

Mosses are reproduced by spores which are contained in an urn-like capsule produced by a sexual process. We have thus an alternation of generations as in the ferns, but with the difference that the asexual generation (spore capsule) grows on the sexual. The sexual elements are contained in what are popularly styled the "flowers" of the moss—technically the perichaetium. This is formed at the apex of the stem, and consists of mere crowded whorls of "leaves" enclosing either the male or the female elements, or both in the same flower. The male flowers contain antheridia, the females archegonia.

The antheridia consist of a number of cells, each containing a coiled-up antherozoid which makes its way through a mucilage accompanying its liberation to the archegonium, and fertilises the contained ovum. The latter ultimately develops into a capsule filled with dust-like spores and covered with a



Moss. 1. Germinating spore. 2. Moss-protonema. 3. Protonema which gives rise to a bud developing into leafy moss-shoot. 4. Longitudinal section of tip of male shoot. 5. Tips of female shoot with archegonia, two of which are enlarged to show the calyptra or caps which are thrown off when the spores are ripe. 6. Leafy female shoot with fully developed capsule. All highly magnified. From Kerner's Natural History of Plants (Blackie)



cap (calyptra), thrown off when the spores are ripe. The spore-capsule is then seen to have a distinct lid, and when this falls off the spores are protected in certain orders by a peristome—a series of long hygroscopic teeth. These open out in a dry atmosphere to liberate the spores, and close down in damp to keep them dry. There are variations of this mechanism in different orders of mosses. The spore on germination produces a hair-like thread which branches, and develops buds which grow into leafy stems—the moss-plant. Mosses are ubiquitous, growing even on bare rock and brick wall, preparing the way for higher vegetation by forming a humus of their dead bodies and the minute particles of organic matter which every tuft of moss collects from the air. *See Bog Moss; Botany; Hair Moss; consult Synopsis of the British Mosses, C. P. Hobkirk, 1873; The Student's Handbook of British Mosses, H. N. Dixon, 1904.*

**Moss.** Seaport of Norway, in the co. of Akershus. It stands on a small bay of Oslo Fjord, 33 m. due S. of the capital. There are extensive iron mines in the vicinity, and a quantity of timber is exported. The act of union between Norway and Sweden was signed here Aug. 14, 1814. Pop. 17,008.

**Mossamedes.** A seaport of Angola, W. Africa. It is situated on Little Fish Bay. Its industries are connected with fishing, whaling, and oil refining. There is a rly. from Mossamedes as far as the Chela Mountains. Pop. 5,000.

**Mossel Bay.** Seaport of Cape Province, S. Africa. It lies 318 m. by rly. E. of Cape Town, almost midway between that city and Port Elizabeth. The bay on which it is built was frequently used by the Portuguese navigators in the early 16th century. Pop. 7,227.

**Mossley.** Mun. bor. of Lancashire, England. It stands on the Tame, 10 m. E.N.E. of Manchester by rly. It is also served by the Huddersfield canal. The industries include cotton and woollen mills, also engineering works. Mossley became a borough in 1885. Near the town are some British remains known as Bucton Castle. Market day, Thurs. Pop. 12,042. Mossley Hill is a suburb of Liverpool, with a rly. station.

**Mossop, HENRY** (c. 1729–c. 1774). Irish actor. Son of the Rev. John Mossop, he was educated at Trinity College, Dublin, but his tastes led him to the stage. In 1749 he made his first appearance in Dublin, and in 1751 in London

as Richard III, under the patronage of Garrick. After a few successful years he quarrelled with Garrick, and in 1759 returned to Dublin where he opened a theatre of his own. There, as in London, he had many successes, but financially his theatre was a failure, and he became bankrupt in 1771. He was some time in prison for debt.

**Moss Side.** Suburb of Manchester, England. It comprises the eccles. dist. of S. James and Christ Church on the S. side of the city. *See Manchester.*

**Moss Trooper.** Name given in Scotland to the marauders and cattle thieves who in the 17th century infested the border and frequently carried out raids on towns and villages of Northumberland. Moss troopers figure in S. R. Crockett's novel *The Men of the Moss Hag*.

**Most.** Town of Czecho-Slovakia. Situated on the river Biela, it is 83 m. by rly. N.W. of Prague, at the centre of the principal coalfield in the country. There are also sugar, distilling, and machine making industries. The famous Seidlitz mineral springs are in the vicinity. The town is in that part of Sudetenland ceded to Germany in 1938 and recovered by Czecho-Slovakia after the Second Great War. Pop. 23,110.

**Mostaganem.** Small seaport of Algeria. It stands between Ōran and Algiers, and is directly connected with the former, via Arzeu, by rly. It is identified with the *Portus Magnus* of the Romans. The harbour is exposed. Alfalfa is the chief export. Pop. 36,961.

**Mostar.** Town of Yugoslavia, in Herzegovina. It stands on the Narenta, in a narrow valley within a district of great fertility, 47 m. S.W. of Sarajevo, with which it has rly. connexion. Many of the modern buildings are Italian in character, although the town is predominantly Turkish. There are many mosques and a fine Greek cathedral. Mostar has been the seat of Greek and R.C. bishops. Tobacco is the principal manufacture. Pop. 20,295.

#### **Most Favoured Nation Clause.**

In commercial treaties, a clause granting preferential treatment to particular countries in regard to duties imposed on goods imported from those countries. Such preference is frequently conditional upon reciprocal treatment being granted by the most favoured nation or nations. *See Free Trade; Imperial Preference; Protection; Reciprocity; Tariff Reform.*

**Mosul or Mossul.** City of Iraq, capital of a vilayet of the same name. It stands on the Tigris, about 220 m. N. of Bagdad. Opposite it, on the E. side of the river, are the vast mounds which are the remains of Nineveh. It is the seat of a patriarch of the Chaldean Catholics. It once was famous for its muslin, the name being



Mosul, Iraq. Street scene in the bazaar of the city

derived from that of the town. From it an important caravan road leads through Rovanduz into N.W. Persia.

There are oilfields in the vilayet, and a concession to work them was granted to a British company before the First Great War. By a decision of the Allies at San Remo in 1920, the validity of this concession was upheld, and the French government were allotted the former German interests in the British company. Before and during the war Mosul was the headquarters of a Turkish army corps, and after the granting by the Allies of the armistice to Turkey in Oct., 1918, it was occupied by the British. The claim of Turkey to the vilayet or province of Mosul was the subject of a conference held at Istanbul in May–June, 1924, between Great Britain and Turkey. This conference proved abortive, and the question was referred to the League of Nations, which sent a committee to the Mosul district to study and report upon the conditions. The League decided that it should be part of Iraq and in 1926 the boundary was fixed in accordance with this decision. A neutral zone was established for 50 miles on each side. Turkey obtained for 25 years a royalty of 10

per cent of the oil revenues of Iraq. During the Iraqi rebellion in 1941, German aircraft arrived at Mosul on May 15 and were bombed at intervals by the R.A.F. until the rising collapsed on May 30. Mosul was occupied by British troops on June 3, 1941. Pop. vilayet, 553,488; city, 80,000. See Iraq.

**Moszkowski, MORITZ** (1854-1925). Polish composer. Born at Breslau, Aug. 23, 1854, he studied at Dresden and Berlin, and, after a successful career as pianist and composer, he settled in Paris in 1897. His works included two books of Spanish dances for the piano, a violin concerto, two orchestral suites, a symphony, and many songs. An opera *Boabdil* was produced at Berlin in 1892, and a ballet *Laurin* in 1896. He frequently appeared in London as pianist and conductor, his final appearance being in 1908 at Queen's Hall when he conducted a programme of his own works. He died in Paris, March 8, 1925.

**Motala.** Town of Sweden, in the län or co. of Östergötland. It is on the E. shore of Lake Wetter, 42 m. W.S.W. of Norrköping. The river Motala enters the lake close to the town. Pop. 5,985.

**Motet.** Vocal music in the contrapuntal style. Formerly it was set to either secular or sacred words, but since the beginning of the 14th century it has been exclusively reserved for the latter, and employed in the service of the Church. Its best period was from about 1500 to 1600, contemporary with the golden age of its secular counterpart, the madrigal. The best composers of that century produced both kinds. More modern compositions by Haydn, Mozart, Cherubini, Mendelssohn, and others, which bear the name, have little in common with the true motet style, and may be regarded rather as anthems or short sacred cantatas. See Counterpoint.

**Moth.** Class of insects forming the greater number of the order Lepidoptera. They are distinguished from the butterflies (*q.v.*) by the following characters. In butterflies the antennae end in a club or knob, whereas in moths the antennae are without a knob at the extremity. The wings of moths usually bear an interlocking mechanism absent in butterflies. This consists of a long bristle, or group of bristles, borne on the base of the hind wing, which become engaged in a hook-like "catch" on the under side of the fore wing. Too much stress has been laid in the past on the distinctions be-

tween butterflies and moths, resulting in their separation into two sub-orders—the *Rhopalocera* and *Heterocera* respectively. It is now recognized that butterflies form only one superfamily (*Papilionoidea*) among the several that constitute the order Lepidoptera, the remainder comprising the moths. Many moths resemble butterflies in being diurnal and some are equally magnificent in brilliancy of coloration and even larger in size. The giant atlas moths of India have a wing-spread of nearly a foot, and the *Erebos* of America equals or exceeds that dimension. More than 2,000 species of moths are found in the British Isles. The largest is the death's head hawk moth with a wing-spread of 5½ ins. and the smallest are minute creatures of the genus *Nepticula* with a wing-expanse often not exceeding 3 mm. In many species the individuals of the two sexes are very different; thus the male of the drinker moth and emperor moth is smaller than the female and more deeply coloured; also the antennae are comb-like in the male sex and simple in the female. In several cases, including the whiter moth and March moth, the females are either wingless or have those organs reduced to vestiges. Moths include many kinds of which the caterpillars are injurious to human welfare. Thus the caterpillars of the goat moth and wood leopard moth damage the wood of living trees. Those of the swift moths destroy the roots of plants. Those of the cabbage moth attack vegetables; and the European corn borer causes great damage to maize, etc. The codling moth, lackey moth, and whiter moth are highly destructive to fruit-trees. In contrast we have the silkworm moth the caterpillar of which yields the silk of commerce. Along with it are certain Saturniid moths whose caterpillars yield "eri," "tossar," and "muga" silk. Certain other moths have caterpillars which attack noxious plants. The most famous is the *Cactoblastis*, a small moth introduced into Australia where its caterpillars are the main agents controlling prickly pear in that country. See colour plates facing pp. 5880-81; consult Larvae of British Butterflies and Moths, W. Buckler, 1885-1895; Revised Handbook of British Lepidoptera, R. Meyrick, 1938; Moths of the British Isles, R. South, 1939.

**Moth.** Light aeroplane designed by the De Havilland Aircraft co., Ltd. The D.H.60, with an 80 h.p.

Cirrus engine, was designed in 1925, and for the first time made club and private flying in Great Britain a practical proposition. Famous record flights with this type (later with the more powerful D.H. Gipsy engine) included that of Amy Johnson (*q.v.*). Progressively developed over the next 20 years there were many other successful Moth designs, some of them monoplanes, but the original two-seat open-cockpit biplane was perpetuated in the D.H. 82 Tiger Moth, a standard primary trainer of the R.A.F. throughout the Second Great War.

**Mother.** Word common, like father, to most Indo-European languages, the form varying in accordance with phonetic laws. It denotes the female parent. The mother-child relationship, like that of the father and child, has been adapted to religious ideas, many religions including a mother goddess concept. In English law the mother had no rights over her legitimate children until an Act of 1839, and did not acquire equal rights of guardianship with the father until the Infants Custody Act of 1925.

On the death of the father the mother is natural guardian of the children of the marriage and may act jointly with any guardian appointed by the father. She may also appoint a guardian to act jointly with the father after her death. The court may remove her from guardianship. During the marriage or on divorce the court has also power to give the mother the custody of the children if that is in their interests. A mother may be required under the poor law to maintain her child. If a person dies intestate and without issue the mother and father are entitled to succeed to the estate subject to the rights of the wife (or husband). If an illegitimate person dies intestate and without issue the mother succeeds to all the estate subject to the rights of the deceased person's wife (or husband).

#### Mother Carey's Chickens.

Name given by sailors to the stormy or storm petrel (*Thalassidroma pelagica*). Mother Carey is a corruption of *mater cara* or dear mother, meaning the Virgin Mary. French sailors call these birds *oiseaux de Notre Dame* or birds of Our Lady. They are supposed to give warning to sailors of an approaching storm, and it is regarded as very unlucky to kill one. The legend is that each bird contains the soul of a dead seaman.

**Mothering Sunday.** Name given in England to the fourth Sunday in Lent. According to an ancient custom, apprentices were enabled on that day to go home to visit their mothers, bringing them a small present of flowers or the like. The custom is still observed in many parts of the country. Refreshment Sunday falls on the same day. See Sunday.

**Mother-of-Pearl.** Inner layer of the shells of many bivalve molluscs, including pearl oysters. It possesses some resemblance to pearls, and has much the same composition. On account of its beautiful iridescence and its high polish, mother-of-pearl is used in thin sheets to decorate articles of ornament and for the toilet, knife handles, and jewelry. Though mostly derived from bivalves of the torrid zones, a good variety is obtained from pearl mussels in the Mediterranean Sea.

**Mother of Thousands.** Popular name applied equally to *Saxifraga sarmentosa* and *Linaria cymbalaria*. The first named, also known as creeping sailor and wandering Jew, is a native of China and Japan, with roundish, lobed leaves, which sends out long pink runners giving rise to young plants at frequent intervals. The flowers are white with a few spots of yellow and red. *Linaria cymbalaria* is a much smaller plant,



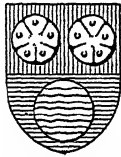
Mother of Thousands. Spray of leaves and flowers of *Linaria cymbalaria*

a native of Europe, rooting in the crevices of rocks and old walls. Its glossy leaves are ivy-shaped, and its spurred flowers are lilac. It is also called ivy-leaved toadflax.

**Mother's Day.** Day set aside in the U.S.A. in honour of motherhood. The idea was conceived by Miss Anna Jarvis, of Philadelphia, who coined the slogan: "In honour of the best mother that ever lived—your mother." On May 10, 1913, a resolution was passed by the senate and house of representatives, to make the second Sunday in May a public holiday in honour of motherhood. On that day Americans give a present to their mothers.

**Motherwell and Wishaw.** A police burgh of Lanarkshire, Scot-

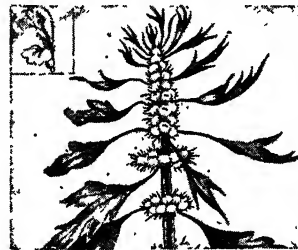
land. The two formerly separate burghs were united in 1920. Motherwell lies N.E. of the river Clyde, which it touches on the S.W., 13 m. S.E. of Glasgow and 2 m. from Hamilton, and has rly. services. It owes its growth to its situation on the great Lanarkshire coalfield; in addition to the col-



Motherwell and Wishaw arms

lieries there are large engineering works, boilers, bridges, railway rolling stock, clocks, and electrical equipment being among its products. The public buildings include a town hall and two public libraries. Pop. 68,000.

**Motherwort** (*Leonurus cardiaca*). Perennial herb of the family Labiatae. A native of Europe and N. and W. Asia, it has a stout rootstock, and erect, four-angled, leafy stems. The opposite leaves are deeply cut into



Motherwort. Foliage and flower whorls. Inset, single flower

five or seven lobes, and the rosy-pink flowers are arranged in a series of whorls, which convert the upper part of the stem into a long leafy flower-spike. The whole plant is downy.

**Moth-flies.** Name given to minute moth-like flies, the body and wings of which are densely clothed with hairs, forming the family Psychodidae. About 70 species are British, some of which are often seen on window panes. In warm countries the species of *Phlebotomus*, or sand-flies, are troublesome owing to the blood-sucking habits of the females. *P. argentipes* and *P. chinensis* are known to transmit the disease of kala-azar in India and China, while other species are carriers of the virus of sand-fly fever in S. Europe and elsewhere.

**Moth Orchid** (*Phalaenopsis*). Genus of epiphytes of the family Orchidaceae, natives of the Malay Archipelago and Eastern India. They have no pseudo-bulbs, but have permanent short leafy stems,



Moth Orchid. Flower sprays of a hybrid form

and the broad leathery leaves are in two ranks. The large showy flowers form a loose spray. They are supposed to bear some resemblance to moths on the wing. A beautiful species is *P. schilleriana*, from the Philippines, with rosy flowers and mottled leaves.

**Motion** (Lat. *motio*). In mechanics, change of position of a body. All motion is relative, e.g. a body moving on the earth is treated usually as though the earth were at rest, though it is moving round the sun, and the latter is moving through space, both of which motions are imparted to the moving body. The laws of motion, first enunciated by Newton, are dealt with under Mechanics.

**Motion.** In music, the progression of voices or parts from note to note. The motion of a single part may be upward; downward; conjunct, proceeding by single degrees; disjunct, proceeding by skips. Comparing one part with another motion may be of three kinds: similar, when the parts move in the same direction; contrary, when they move in opposite directions; oblique, when one is stationary while another moves up or down.

**Motive** (Lat. *motivum*, from *movere*, to move). The mental cause of a voluntary decision or action. Usually an important choice will have more than one motive, though one may predominate. Motives used to be defined as "incentives to the will"; as the concept of a will was discarded, they were regarded as forces supporting the contestants in a mental struggle. If conscience is at odds with some forbidden impulse, various memories, beliefs, feelings, ideals, etc., will be marshalled on either side, each constituting a motive which will affect the final choice of the mind.

It used to be thought that a man could discover his own motives,

and much value is still set by some religious bodies on self-examination. Now it is realized that unconscious elements play a large part in determining human behaviour. This fact does not destroy all the value of honest self-scrutiny, but acts as a useful check when lofty motives are adduced for dubious behaviour. The motive of an action may be contrasted with its intention, the latter taking account of known and accepted consequences. Desire to produce these effects may be a motive; on the other hand, the motive may be an impulse so strong that it leads a man to "damn the consequences."

**Motley, JOHN LOTHEP (1814-77).** American historian. Born at Dorchester, Mass., April 15,

1814, he was educated at Harvard, Göttingen, and Berlin. Having worked with the American legation in St. Petersburg, he became U.S.

minister in Vienna, 1861-67, and in London,

1869-70. He passed much time in England, and at Frampton Court, Dorchester, Dorset, he died, May 29, 1877. One of his daughters married Sir William Harcourt.

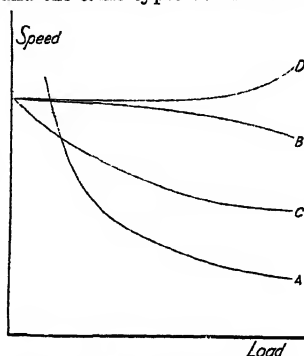
Motley began his literary career with novels, *Morton's Hope*, 1839, and *Merry Mount*, 1849. He had already formed the idea of writing the history of the Dutch, and he spent time in Holland, Belgium, and Germany studying authorities. In 1856 his *Rise of the Dutch Republic*, 3 vols., at once made him famous. It was translated into French, German, and Dutch, and was followed by the *History of the United Netherlands*, 1860-68, another great success. Motley writes with real enthusiasm about the struggles of the Dutch for freedom. His style is clear and vigorous, rising occasionally into passages of noble prose. He wrote also *The Life and Death of John of Barneveld*, 1874. His correspondence was edited by G. W. Curtis, 1889. *Consult J. L. M. and His Family*, ed. S. St. J. Mildmay, 1910.

**Motor.** A machine supplying motive power. The name has come to be applied to prime movers other than the steam engine, e.g. electric motor; petrol motor; spring motor. The driver of an electric train in Great Britain is

commonly called a motorman, as distinct from the "engine driver" of a steam locomotive. Spring motors are used for driving gramophones, shop display machines, time switches, etc.; the mechanism resembles that of a clock. Weight-driven motors are similar except that a descending weight supplies the driving force. In model aeroplanes the energy stored up in twisted strips of rubber drives an airscrew as the rubber unwinds—another form of spring motor. (See Clock; Internal Combustion Engine; Spring.)

**ELECTRIC MOTOR.** Machines for converting electrical energy into mechanical energy may be classified in various ways. The fundamental division is into machines for use with direct current and with alternating current.

Direct current motors differ from D.C. dynamos only in detail. All general principles are the same, and the same types of field wind-



Motor. Diagram showing curves of speed variations with load for different types or direct current motors. A, series; B, shunt; C, compound; D, reverse and differential compound

ings (series, shunt, and compound) are used (see Dynamo). *Series* motors have a speed characteristic which varies inversely with the load; they will reach dangerous speed if the load is removed. They are used for traction work, etc., where a high starting torque is required. *Shunt* motors have a more stable characteristic, which drops slightly from no load to full load; they are used in most machine drives where this is of value. *Compound* motors have the normal characteristics of a shunt machine with a slightly greater drop in speed, but the series field enables them to cope with high starting torques and momentary overloads. *Reverse compound* machines (where the series field opposes the shunt field) have a remarkably constant

speed characteristic, but little or no overload capacity.

Alternating current motors, in addition to classification as single phase or polyphase types, may be subdivided into *synchro* motors, running at one fixed speed, and *asynchro* motors, which can run at various speeds. Synchronous motors resemble alternators in the same way that D.C. motors resemble dynamos: an alternator connected with another source of electric power will, if its prime mover stops, continue running like a D.C. dynamo. A synchronous motor will develop torque only when in absolute synchronism with the supply frequency; if unduly overloaded, it will stop, and it is not self-starting.

Asynchronous motors may be further subdivided into *induction* and *commutator* motors. The former are probably the most widely used of any, owing to their simple and robust construction. They have two main classes: *slip-ring*, with a conventional type of wound rotor, and *squirrel-cage*, with a simple rotor consisting of a cage-like structure of copper bars embedded in the iron stampings. Induction motors normally run at a speed slightly lower than the appropriate synchronous speed.

Commutator machines are of many designs. A simple series motor, providing it does not have solid iron field magnets, will run on A.C. as well as D.C.; the motor of a domestic vacuum cleaner is of this pattern. The *Schrage* motor allows a wide range of speed by shifting the relative position of two sets of brushes on the commutator. Hybrid designs, such as *series-repulsion* and *repulsion-induction*, are intended to partake of the advantages of two or more types.

Motors may be classified according to their mechanical construction and method of enclosure, such as *open type*; *protected*; *drip-proof*; *totally enclosed pipe ventilated* (for dusty situations); *totally enclosed radiator cooled*. There are variations such as vertical or horizontal mounting, and skeleton motors supplied as a stator and rotor unit without enclosure of bearings, for building directly into machine tool units as an integral part of the machine. See Electro-Magnetic Machine.

**Motor Boat.** Small vessel propelled by a motor, especially by an internal combustion engine. Its inception dates from 1885, when a launch was successfully propelled by a motor engine. Slow progress was made until 1904, when the Royal Automobile Club held a

cross-Channel race for motor boats, with resultant publicity.

Motor boats may be divided roughly into two categories: displacement craft and hydroplanes.

vehicles, but more because of greatly extended services. Moreover, the charabanc was associated with special trips rather than regular service. While motor buses.

point threatened with invasion. Motor coaches took women and children from areas likely to be attacked by German aircraft early in the Second Great War.

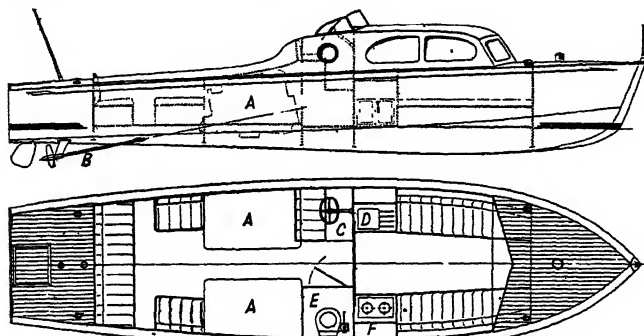
**Motor Cycle.** Any mechanically propelled vehicle, other than an invalid tricycle, with less than four wheels and an unladen weight not exceeding 8 cwt. This is the legal definition of a motor cycle, a term which thus includes three-wheeled cars or runabouts as well as the two-wheeled power-driven motor cycle (the solo motor cycle), the motor cycle with sidcar, and the autocycle, or motorised bicycle.

The adoption of the high-tension magneto, c. 1905, marked the achievement of reliability in the motor cycle, and after the First Great War this vehicle became the most numerous type of powered vehicle on the roads.

Motor cycles are classified according to their type (i.e. for transport, touring, or sport), and the capacity of their engines in c.c. Autocycles are fitted with pedals and, as a rule, have an engine of under 100 c.c. The power units of autocycles and of lightweight motor cycles are usually single-cylinder two-stroke engines in which there is one power impulse per revolution of the crankshaft.

The parts of the two-stroke engine are shown in the diagram. Such power units in the smaller sizes develop approx. the same power as a four-stroke engine of equivalent size. The limiting factor is the short period during which the charge of fresh gas is induced. The popularity of the two-stroke for light machines arises from its simplicity, low cost of manufacture, and lasting qualities. Lubrication is usually effected by mixing oil with the petrol—mixture referred to as "petrol."

Single-cylinder engines are used in nearly all machines up to 250 c.c. Above this size there are both single- and twin-cylinder engines and, in the luxury class, some four-cylinder engines. There are power units with the two cylinders arranged in "V" formation and others with the cylinders horizontally opposed to each other, but the most popular type of twin is



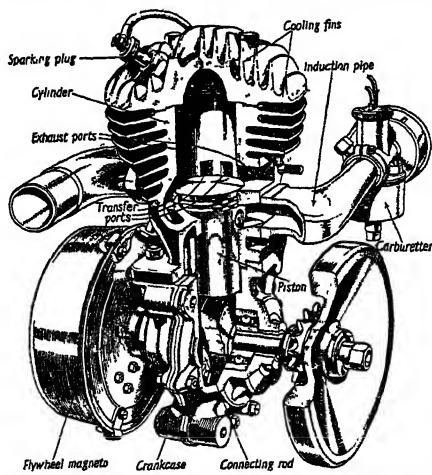
Motor Boat. Diagram of deck and broadside. A, twin Diesel engines. B, propeller shaft. C, steering position. D, sink. E, lavatory. F, stove. By courtesy of Yachting World

In the former the same amount of water is displaced, no matter at what speed the boat travels. A hydroplane rises partly out of the water when running fast, which reduces the amount of water displaced. Displacement craft range from cabin cruisers, 20 ft. in length and upwards, to outboard motor boats. A cruiser has cabin accommodation and is usually seaworthy in moderately rough conditions. The power unit is generally a heavy oil engine, giving a speed of 8-10 knots. Outboard motors, complete with propeller, propeller drive, and fuel tank, are attached to the sterns of small boats used in sheltered waters. Specially designed craft use these power units for racing. The engines are of the two-cycle type, weigh about 40 lb., and are usually rated at 1½-2½ h.p.

Hydroplanes range from the open launch with a speed of 20-30 knots and powered by a specially adapted motor car engine of some 30 h.p., to the Blue Bird, fitted with two aero engines, that attained a speed of 141.74 m.p.h. on Lake Coniston in 1939. High speed motor launches were used by the Air-Sea Rescue service (q.v.) in the Second Great War. Motor vessels (q.v.) are of considerable tonnage, fitted with Diesel-type engines, and capable of remaining at sea in all weathers; many steamship companies now use them.

**Motor Coach.** Vehicle used for long distance passenger transport. In the 1920s the term charabanc, taken over from horse-drawn vehicles, was replaced by that of motor coach, partly owing to the additional comfort of newer

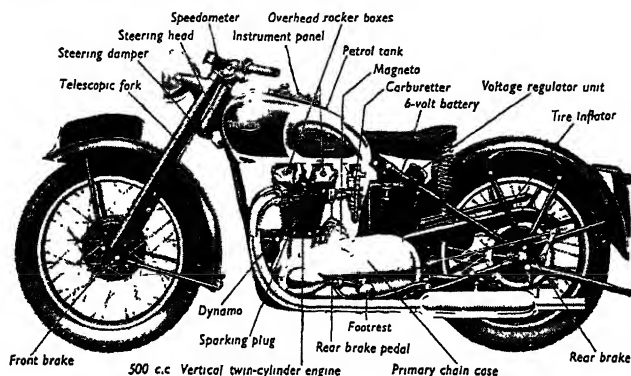
which are stage carriages, ply for hire in towns or over relatively small distances, with frequent stops, motor coaches maintain services which form a network like a railway system, with stops at fixed points only. Fares are paid at a booking office and not on the vehicle. Expansion, convenience, and low fares of motor coach ser-



Motor Cycle. Diagram showing arrangement of single-cylinder two-stroke engine

vices attracted thousands of travellers before the Second Great War; this volume of heavy traffic was one reason for the improvement of highways, while outlying districts were brought into closer contact with centres of population. In 1940 R.A.S.C. motor coach companies were formed in Great Britain to transport troops to any





**Motor Cycle.** Diagram showing the principal parts of a modern 500 c.c. vertical twin-cylinder motor cycle

the vertical twin, in which the cylinders are side by side and the two pistons move up and down together. This gives one power impulse per engine revolution—a smooth torque or turning moment—but with single-cylinder balance.

The majority of four-stroke engines are of overhead-valve (o.h.v.) type, with the valves arranged at an angle in a hemispherical combustion chamber and operated by rocking levers and push rods from cams mounted in an extension of the crankcase. Overhead valves are preferred to side-by-side valves because a smaller area is in contact with the burning gases, so that less heat is wasted and there is greater freedom from cylinder distortion. Overhead valves are used in touring as well as sports engines. Lubrication is automatic and usually on the dry-sump system, in which one mechanical pump passes a continuous stream of lubricant from the oil container to the engine—generally direct to the heavily loaded big-end bearing of the connecting rod—and a second, larger pump draws the oil from the crankcase (thus keeping it “dry”) and returns it to the oil container ready, after passing through a filter, for further use.

Engine cooling is almost invariably by ribs cast on the cylinder and cylinder head; these dissipate the excess heat by conduction, radiation, and convection—when the motor cycle is moving, mainly by conduction. Carburation, once the engine has been started, is automatic and is controlled by a single lever usually in the form of a rotatable right handlebar grip. Transmission is by roller chain or chains except on some of the more expensive motor cycles, which have a cardan shaft with either spiral bevel or worm gearing. Four-speed foot-controlled gear boxes

with hand clutches and pedal (kick) starters are standard on nearly all motor cycles; autocycles have a single gear or, at the most, a simple two-speed gear, plus a hand clutch.

All motor cycles are fitted with sprung front forks, generally in the

form of a pair of telescoping legs controlled hydraulically. Similar rear-wheel suspension is available on many larger motor cycles. Except on lightweight machines, tyres are of 3½-in. section or larger. Motor cycles have internal-expanding brakes, and are exceptional in their braking efficiency, 30 ft. from 30 m.p.h. being usual.

Under the Road Traffic Act, 1934, the minimum age for riding a motor cycle is 16 years. The learner-rider of a solo motor cycle, unlike the driver of a car, need not be accompanied by an experienced driver, but may not carry a pillion passenger—other than one who has passed the driving test or holds a full driving licence. It is an offence for more than one person in addition to the driver to ride on a two-wheeled motor cycle, and for even one person in addition to the driver if that person is not sitting astride on a proper seat behind the driver. See Internal Combustion Engine.

## MOTORING AND MOTORING LAW

*The development of the use of the motor vehicle for recreation is here described. An account of motor racing, and a full explanation of the law relating to motoring and motor vehicles in the United Kingdom, follow. See also Motor Vehicle*

Motoring, the usual term for the use of a motor vehicle for recreation, increased greatly in popularity between the First and Second Great Wars, becoming the chief week-end recreation of millions, whereas before it had been enjoyed chiefly by the well-to-do. In the U.S.A. it was even more widespread than in Great Britain, there being a motor car registration there for every five persons in 1946. Motoring holidays were increasingly popular, motoring associations relieving owners of most of the worries connected with taking a car abroad. Another form of holiday was the motor camping tour with towed caravan. Petrol rationing and the shortage of new vehicles in Great Britain during and after the Second Great War severely curtailed private motoring there.

The invention of steam-propelled road vehicles in the 19th century (see Motor Vehicle) aroused the opposition of the stagecoach and rly. companies and in 1865 a law enacted in the U.K. required that every road locomotive must be preceded at 100 yds. by a man on foot carrying a red flag, must be in charge of three men, and must not exceed a speed of 4 m.p.h. It was not abolished until 1896, by the Locomotives on

Highways Act, which introduced a speed limit of 14 m.p.h., reduced by the local government board to 12 m.p.h.

The Motor Car Act of 1903 increased the speed limit to 20 m.p.h.; authorised local authorities to impose a speed limit of 10 m.p.h. within certain areas; made driving licences compulsory and “dangerous driving” an indictable offence; and introduced the registration of all self-propelled vehicles.

The Ministry of Transport was formed in 1919, and in 1920 the Road Fund was established; the duties and liabilities of taxation were transferred from the customs and excise authorities to the county councils. The receipts of this taxation, originally intended for road improvements, benefit general revenue. The Road Traffic Act of 1930 abolished the 20 m.p.h. speed limit for private cars and motor cycles, Jan. 1, 1931. The Road Traffic Act, 1934, reimposed a speed limit in built-up areas (30 m.p.h.) and made provision for driving tests.

Taxation, under the 1896 Act by weight, replaced under the 1903 Act by a nominal registration fee, under the Finance Act of 1909–10 was according to engine power, as determined by the R.A.C. formula, and varied from

£2 2s. 0d. for up to  $6\frac{1}{2}$  h.p. to £42 for cars over 60 h.p., with, in addition, a petrol tax of 3d. per gallon, which was increased to 6d. per gall. during the First Great War. The Finance Act of 1920 repealed the petrol tax and substituted a tax of £1 per h.p. by R.A.C. rating. In 1928 the petrol tax was reintroduced. After an experiment in 1947 of taxing cars first registered that year by cubic capacity, a flat rate of £10 was introduced, 1948, for all cars first registered in 1947 or later.

#### Growth of Motoring

Production of motor vehicles in Great Britain rose from 10,500 in 1908 to 447,561 in 1938; number of vehicles in use rose from 73,568 in 1908 to 2,644,202 in 1938, to which must be added 35,247 motor cycles in 1908, and 466,265 in 1938.

The increase in the speed of traffic which came with the application of mechanical motive power to vehicles led to a great improvement in road surfaces, the straightening and widening of existing roads, the introduction of the circular movement of traffic ("roundabouts") at dangerous road crossings, and, in towns, of one-way traffic streets. New roads, bypassing towns, were constructed, and along these occurred ribbon development (*q.v.*). Filling stations for the supply of petrol, oil, and tires, which usually also did repairs, sprang up in towns and villages, and along country roads. Old inns and hotels revived and a new type of inn called a road-house, supplying dancing, swimming, refreshments and sometimes accommodation, came into being.

**MOTOR RACING.** Speed and endurance contests between mechanically propelled vehicles, sometimes specially designed as racing vehicles, have become a leading sport, and an increasingly popular spectacle, since *Le Petit Journal* in 1894 organized a competition for "carriages propelled without horses" of a minimum speed of  $7\frac{1}{2}$  m.p.h. For that competition 102 cars entered, 21 of which reached the required speed in a preliminary test; three covered the 78 m. between Paris and Rouen at over 12 m.p.h. Next year, in a test run from Paris to Bordeaux, nine out of 22 cars finished, one achieving an average of 15 m.p.h. Road racing on closed circuits has since remained supreme on the Continent. For many years, however, road racing in the U.K. was not permitted, and track events at Brooklands (*q.v.*) were the nursery of British racing

drivers. The R.A.C. eventually organized road races on the lines of the Monaco grand prix, the first being held in the Isle of Man in 1933. In 1934 road racing started at Donington, Leicestershire.

Sports-car racing has been closely allied to the development of touring cars, and in this field Great Britain can look back on a long list of successes in *e.g.* the Tourist Trophy races on the Ards circuit in Ulster, the Phoenix Park events in Dublin, the Mannin Moar and Mannin Beg races at Douglas, Isle of Man, the Double-Twelve-Hours' race at Brooklands, and the International Grand Prix and other events at Donington.

Famous meetings abroad were the Monte Carlo rally, an annual reliability trial; the German grand prix at Nuremberg; the Tripoli grand prix and the French grand prix. The Indianapolis 500-m. race is the main event in the U.S.A.

#### Speed Records

Some speed records are: 1898, an electrically-driven vehicle achieved 39.24 m.p.h. over a kilometre; 1902, an internal combustion engine vehicle reached 76.08 m.p.h.; 1904, 103.56 m.p.h.; 1927 Segrave raised it to 203.79 m.p.h.; 1932, Campbell passed the 250 m.p.h. mark at 253.97 m.p.h. Intense competition between Campbell, Eyston, and Cobb culminated in 1939 in the achievement of 368.7 m.p.h. by Cobb, at Bonneville Flats, Utah, U.S.A. Cobb in 1947 set up a new record of 394.196 m.p.h.

**LAW RELATING TO MOTORING.** Under the Road Traffic Acts motor vehicles are defined in Great Britain as mechanically propelled vehicles intended or adapted for use on roads, and are classified as heavy or light locomotives, motor tractors, heavy motor cars other than public service vehicles, motor cars, public service vehicles, motor hackney carriages, invalid carriages, and motor cycles.

Heavy locomotives, light locomotives, and motor tractors are vehicles of various weights which may draw trailers but may not carry loads themselves. The vehicles that carry loads of goods or passengers are heavy motor cars (weight over  $2\frac{1}{2}$  tons) and motor cars (weight up to 3 tons for passenger vehicles designed to carry more than 7 passengers in addition to driver and not over  $2\frac{1}{2}$  tons in other cases). An invalid carriage is a vehicle not over 5 cwt. in weight designed and constructed for the use of persons with a physical defect. A motor cycle is a vehicle not over 8 cwt.

which has less than 4 wheels, and is not an invalid carriage.

There are regulations prescribing the construction and use of each class of vehicle. The regulations applicable to construction of all motor vehicles make the following compulsory: parking brakes (except for motor cycles and invalid carriages); a speed indicator (exceptions include invalid carriages and motor cycles with cylinder capacity not over 100 c.c.); a driving mirror (exceptions include motor cycles); a wind-screen wiper (unless the windscreen can be opened to enable the driver to see without looking through it); a warning instrument (this must not be a gong, bell, or siren except in certain official vehicles, *e.g.* police cars); a silencer; safety glass on the windscreen and all windows facing to the front on the outside (except windows on the upper deck of a bus).

The most important further requirements are (i) for motor cars: maximum width, 7 ft. 6 ins.: an efficient braking system with two independent means of operation; if weight exceeds one ton, all tires must be pneumatic subject to minor exceptions; wings must be fitted; (ii) for invalid carriages: maximum width 7 ft. 2 ins.; an efficient braking system operating on at least 2 wheels; wings must be fitted; (iii) for motor cycles: braking system with two means of operation; pneumatic tires; wings must be fitted.

#### Maintenance and Use

The following are the requirements as to maintenance. All vehicles, trailers, and their parts and accessories, and the load carried, shall be in such a condition that no danger is likely to be caused. The load must be well secured. Windscreen wiper, speed indicator, brakes, steering gear, tires, and glass must be properly maintained.

The following regulations relate to the use of all vehicles. There must be no excessive noise due either to any defect in the vehicle or to the way it is loaded; the engine must be stopped when the vehicle is stationary, except when held up in traffic, or when it is necessary to have the engine running to examine it because of some breakdown. No warning instrument may be sounded when a vehicle is stationary or between 11.30 p.m. and 7 a.m. in a built-up area. The vehicle must not be reversed for a greater distance than is reasonably necessary, and it must not cause any unnecessary

obstruction of the road. The driver must always be in a position in which he has proper control of the vehicle and a full view of the road and traffic ahead. He must not leave the vehicle without first stopping the engine and setting the brake.

Among miscellaneous requirements are the following: if one vehicle tows another, the tow rope must not be more than 15 ft. long and must be made easily distinguishable; on a vehicle registered on or after Oct. 1, 1937, no mascot with a sharp projection may be carried in any position in which it is likely to strike or cause harm to any person in a collision.

A police officer and certain other officials may insist on inspecting the brakes, silencer, or steering gear of any vehicle. It is illegal to sell a vehicle in a condition not complying with the regulations. Before a motor vehicle may be driven on the public road, it must be registered and licensed, the driver must hold a driving licence, and there must be an insurance policy in force against certain third party risks.

**Registration.** The vehicle is registered by the local council when it is first licensed and receives an identification mark consisting of an index mark made up of a series of letters and a registration number. The identification mark must be on a plate of the prescribed size and must be exhibited on the vehicle. If it is not so fixed or is obscured, the driver is liable to a fine. For privately owned cars it has white lettering on a black ground. A registration book is issued to the owner and must be produced on request to a police officer or local taxation officer. If the vehicle changes ownership the book is handed to the new owner, who sends it to the council; the old owner must also notify the council. Any alteration to the vehicle which makes the details in the book inaccurate must also be notified.

The fact that a person holds a registration book in which he is described as the owner of the vehicle is no evidence that he is, legally, the owner; e.g. when a vehicle is on hire purchase, the hirer having no right to dispose of it, the hirer will nevertheless appear as the owner.

**Licensing.** Mechanically propelled vehicles (with a few exceptions) must be licensed. The licence must be obtained from the local council and must be affixed

to the vehicle. A certificate of insurance must be produced before a licence will be issued. Members of the armed forces, while they are on leave, may, in certain circumstances, obtain a permit entitling them to use a vehicle belonging to them without a licence. When a vehicle is sold the licence may be transferred to the new owner. The cost of a licence varies with the type of vehicle. Motor vehicles used for the carriage of goods for reward or in connexion with any trade or business require special licences under the Road and Rail Traffic Act, 1933, unless they are vehicles belonging to the British Transport commission under the Transport Act 1947. Licences are normally issued for the calendar year, but may be taken out for certain parts of the year.

#### Trade Licences

Motor manufacturers, repairers, and dealers can obtain either a general, or a limited, trade licence, the plate of which, usually with red lettering on a white ground, may be affixed to any vehicle while that vehicle is in use. A vehicle with a general trade licence may be used for any purpose connected with the business of a motor manufacturer, repairer, or dealer. A vehicle with a limited trade licence may be used only for certain specified purposes, e.g. for testing or trials, or for delivery to a purchaser, and not more than 2 passengers in addition to the driver may be carried and these must be either employees or a prospective purchaser. No passengers may be carried on Sundays, bank holidays, Christmas day, Good Friday, or any other public holiday. No goods except ballast for testing the vehicle may be carried.

**Driving Licence.** No one may drive a motor vehicle on a public road unless he holds a driving licence. No one under 16 may drive any motor vehicle. Persons aged 16 or over may drive a motor cycle or invalid carriage, persons aged 17 or over may drive any class of motor vehicle except a heavy or light locomotive, a motor tractor, or heavy motor car. These last vehicles may be driven only by persons 21 or over. Driving licences are issued by the local county or borough councils. The fee is 5s. and the licence lasts for one year from the date of issue. When application is made for a licence the applicant must make a declaration stating whether he is suffering from certain disabilities, such as epilepsy, or sudden attacks of giddiness, and whether he can,

with glasses if worn, read a number plate at a distance of 25 yards. If he is suffering from certain disabilities, e.g. loss of a hand or foot, he has a right to demand to be submitted to a special driving test; certain other disabilities, e.g. epilepsy or bad eyesight, make an applicant ineligible for a licence.

Subject to one exception, all persons must pass a driving test before being licensed to drive, unless they have already passed the test or held a licence before April 1, 1934. During the Second Great War driving tests were discontinued, and as an exceptional measure emergency licences were issued without any test. A person who had held an emergency licence for 12 months could within a year after Feb., 1947, when the issue of these licences ceased, apply for an ordinary licence and renew that licence annually without passing a test as to his competence to drive so long as he had not been convicted of any serious motoring offence while holding an emergency licence.

#### Learner Drivers

A person proposing to take a driving test obtains a provisional licence (fee 5s.) valid for three months. The holder of this licence can drive the vehicle only when he has in the vehicle with him a person who has held a licence for 2 years or has passed the driving test. This does not apply to a solo motor cycle (see Motor Cycle). The vehicle must have an L sign affixed. When the holder of a provisional licence considers himself proficient, he applies to undergo the test. He must show himself not only competent to drive but also fully conversant with the Highway Code (q.v.). If he fails he may not attempt the test again until a month has elapsed, but a magistrate's court has the power to curtail this period.

A person who proposes to drive a heavy goods vehicle must obtain an additional licence from the local traffic commissioners, or else be licensed to drive public service vehicles. He must pass a further driving test. This licence remains in force for three years. Drivers of public service vehicles also require special driving licences. Every person driving a motor vehicle must at the request of a police officer produce his licence for examination either by the officer or, within five days, at some police station specified by him.

**Insurance.** Under the Road Traffic Act, 1930, with certain



1. *Acherontia atropos* (Death's Head), Britain. 2. *Anesita* 6-10, N India. 3. *Erasmia pulchella*, India, China. 4. *Ophiocla fulvipes*, Africa, Asia, America, Australia. 5. *Mimodes discolor*, W Africa. 6. *Chrysiridia madagascariensis*, Madagascar. 7. *Pericallia galactini*, China,

India, Borneo. 8. *Egythia vaillantiana*, Africa. 9. *Attacus atlas* (Atlas Moth), India, China, Ceylon. 10. *Dobraea uera* (Oleander Hawk Moth), Britain. 11. *Zeryx niphendula* 6-spotted, Borneo, Britain. 12. *Glorina ornata*, N India.

**MOTH: EXAMPLES OF SPECIES FROM ALL PARTS OF THE WORLD**

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[See over]



13. *Euchloron megera*. Africa. 14. *Polydysana rubescens*, Chile. 15. *Smicrinthus ocellatus* (Eyed Hawk Moth), Britain. 16. *Diacrisia purpurata*, Europe, Japan. 17. *Eustera brachyura*, Sierra Leone. 18. *Callimorpha dominula*, Britain. 19. *Nudauretta zaddachii*, S. Africa. 20. *Gyanisa maia*, S. Africa. 21. *Arctia caia*, Britain,

Asia, America. 22. *Milionia zonca*, N. India. 23. *Euscherua militaris*, India, China. 24. *Deilephila euphorbiae* (Spurge Hawk Moth), Britain, Asia. 25. *Hestia flabellicornis*, India. 26. *Xanthospiloptyx superba*, Africa. 27. *Brahmaea wallichii*, N. India. 28. *Sphinx ligustris* (Privet Hawk Moth), Britain, to China and Japan.

**MOTH: EXAMPLES OF SPECIES FROM ALL PARTS OF THE WORLD**

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exceptions (e.g. police cars) no motor vehicle may be used on a road unless it is covered by a policy of insurance or a security against the death or bodily injury of any person, except death or bodily injury (i) arising out of and in the course of the employment by the person insured of the person killed or injured; (ii) to persons being carried in the vehicle or entering or getting into or alighting from it unless they are carried for hire or reward or under a contract of employment; and (iii) liability under contract. The policy must also cover hospital expenses (up to £50 for an in-patient and £5 for an out-patient) and the fees of any doctor giving emergency treatment. A policy of insurance is of no effect until an insurance certificate is issued by the insurance company.

**Speed Limits.** A speed limit has been fixed for 18 classes of vehicles. The only vehicles not specifically limited as to speed are those constructed solely for the carriage of passengers and their effects if fitted with pneumatic tires, adapted to carry not more than seven passengers exclusive of the driver, and not drawing a trailer other than a gas producer. If such a passenger vehicle is drawing a two-wheeled trailer (except a gas producer)—e.g. a caravan—its speed limit is 30 m.p.h. Goods vehicles which are "motor cars" or "motor-cycles" may move at 30 m.p.h. if they have pneumatic tires. Other goods vehicles are limited to lower speeds. In built-up areas, indicated by specific road signs, all motor vehicles are subject to a speed limit of 30 m.p.h. To prove that a vehicle has exceeded the speed limit the evidence of one witness is insufficient unless corroborated—e.g. by a stop-watch.

**Motoring Offences.** The most important motoring offences are dangerous driving; careless driving; road racing; driving on land not part of a road, except on to land within 15 yds. of a road for the purpose of parking; driving while under the influence of drink or a drug; driving away a motor vehicle without the consent of the owner or other lawful authority; failing to stop when required by a police officer; failure to obey directions of a police officer controlling traffic or any traffic sign; exceeding the speed limit. Maximum penalties range from £5 for a first offence in

the case of driving on to land not part of a road, to £100 plus four months' imprisonment for a second conviction of driving under the influence of drink. In addition any court may disqualify a driver from holding an ordinary driving licence for any offence in connexion with the driving of a motor vehicle except on a first or second conviction for exceeding the speed limit. The court is bound by law, unless there are special circumstances, to disqualify a driver for at least a year for dangerous driving on a second or subsequent conviction; on conviction for driving under the influence of drink or drugs; for driving a vehicle not validly insured, or for road racing.

A person disqualified for more than six months may after six months apply to have his licence restored, and if refused may apply again at intervals of three months. A person convicted of careless or dangerous driving may be disqualified until he has passed the driving test again.

#### Endorsement of Licence

When a person is convicted of an offence in connexion with the driving of a motor vehicle, the court may, and in the case of a conviction for reckless or dangerous driving or any disqualification must, order the conviction to be endorsed on his licence. A person whose licence has been endorsed on a conviction for exceeding the speed limit may after a year obtain a clean licence if he has had no further endorsements during that year and he held, or was entitled to, a clean licence before he was convicted. A person whose licence has been endorsed for a more serious offence may after three years obtain a clean licence if he has had no further endorsement during that time.

**Pedestrian Crossings.** Free and uninterrupted passage must be given to any pedestrian on the carriageway at a crossing not controlled by the police or by lights, the pedestrian having precedence. A driver approaching a crossing must, unless he can see there is no pedestrian on it, proceed at such a speed that he can if necessary stop before reaching the crossing. Where traffic at a crossing is controlled by police or by lights, every pedestrian who has begun to cross before the driver is given the signal to proceed must be allowed free and uninterrupted passage. A vehicle must not stop on a pedestrian crossing except to avoid an accident or when the

driver is unable to proceed by circumstances beyond his control.

**Accidents.** Where an accident occurs owing to the presence of a motor vehicle on the road and damage or injury is caused to any person, vehicle, or animal (which means any horse, cattle, ass, mule, sheep, pig, goat, or dog, but not a cat) the driver of the vehicle must stop and, if required to do so by any person having reasonable grounds for so requiring, must give his own name and address, and the name and address of the owner, and the identification marks, of the vehicle. If for any reason he does not give his name and address he must report the accident to a police officer or police station as soon as possible, in any event within 24 hours. Where the accident causes personal injury to some other person the driver must either produce his insurance certificate at the time to a police officer, or to some person having reasonable grounds for requiring its production, or he must report the accident and produce the certificate to a police officer or at a police station within 24 hours. He will, however, not be convicted for failing to produce the certificate if he produces it within five days at a police station specified by him at the time of the accident.

#### Liability for Damage

In addition to any criminal liability for, e.g., careless or dangerous driving that a motorist may incur as a result of an accident in which he has been involved, he may also be made to pay damages to compensate any person who has sustained personal injury or damage to property by reason of the accident. The test of liability to pay damages is failure to take reasonable care. Suppose A's vehicle collides with B. If A is solely to blame he is liable for all the damage suffered by B, and cannot call on B to pay any part of his (A's) damage. A similar result follows if B is solely to blame. If, however, A and B were each partly to blame, even though one was much more to blame than the other, the result until 1945 was that neither could recover any damages from the other. The Law Reform (Contributory Negligence) Act 1945 provided that a person partly to blame should be entitled to recover damages, but the amount he recovered should be reduced according to the degree in which he was to blame.

**Lighting.** Between one hour after sunset and one hour before sunrise during summer time, and between half an hour after sunset and half an hour before sunrise during the rest of the year, vehicles must carry two white lights in front (one white light for solo motor bicycles and invalid carriages) and one red light to the rear. Vehicles may be exempted from showing these lights in certain parking places. Lights which swivel while the vehicle is in motion, other than dipping headlights, are prohibited. A solo motor bicycle need not show any lights if it is being wheeled by a person on foot on the left hand side of the road.

**Consult** Motor Dictionary, B. R. Dierfield, 1939; Motor Driving Made Easy, R. F. Broad, 1940; About a Motor Car, P. Ladyman, 1946; Motorists' Law of the Road, 1946; Development of Road Motors, R. W. Kidner, 1947; Motor Manual, annually; Motorists' Diary, annually.

**Motor Insurers' Bureau.** Company set up in 1946 by motor vehicle insurers which, by agreement with the ministry of Transport, undertook to pay damages awarded by the courts to persons injured, or to the personal representatives of persons killed, in road accidents caused by motor vehicles where the damages cannot be recovered either because the motorist has failed to insure or because the policy is for some reason inoperative. The liability of the motorist must first be established. In cases where the motor vehicle concerned cannot be traced an *ex gratia* payment may be made. Notice must be given to the bureau not later than 21 days after legal proceedings against the motorist have been started.

**Motorised Troops.** Military units provided with their own mechanical transport. Infantry included in armoured divisions have their own vehicles, which they drive and maintain themselves, to enable them to advance at approximately the same speed as armoured fighting vehicles; such units are known as motorised infantry. Troops supplied with transport for some particular task only are termed lorry-borne. Broadly speaking all arms of the British army are motorised, except infantry battalions outside armoured divisions, and these are frequently transported in troop-carrying vehicles of the R.A.S.C.

**Motor Nerves.** Nerves which conduct impulses from the brain

or spinal cord to the voluntary or involuntary muscles, and cause them to contract. When, for instance, a person wishes to raise his arm, an impulse starts from the brain and, travelling down the motor nerves, stimulates the appropriate muscles, which perform the action intended. The reaction seems ultimately to depend on the liberation of a chemical substance at the junction of nerve and muscle. See Nervous System.

**Motor Roads.** Highways specially constructed for fast vehicular traffic. Found chiefly on the Continent and in the U.S.A., they eliminate crossings and sharp curves. See Autobahn; Road.

**Motor Torpedo Boat.** Small high-speed vessel designed for night attack on enemy convoys or warships. Mostly built for the Royal Navy during the Second Great War, they operated in the North Sea and English Channel, where with other coastal craft they obtained ascendancy over the German light forces. German craft known as E-boats were similar to the British but slightly faster. Italian anti-submarine boats were smaller and had a range of only some 250 m., but like the others carried two torpedo tubes, machine-guns, and automatic shell-firing guns. See Coastal Craft; E-boat.

## MOTOR VEHICLE DESIGN & MECHANISM

A. G. Douglas Cleese, Associate Editor, The Autocar

*A brief history of the application of mechanical power to vehicles is followed by a detailed description of the component parts of a typical motor car, and some indication of the differences to be found in other types of motor vehicle. See also Diesel Engine; Electric Traction; Internal Combustion Engine; Motoring*

To Nicolas Cugnot is generally attributed the first steam-driven vehicle, in 1768-70; in Great Britain Richard Trevithick in 1802 constructed a steam vehicle which travelled from Camborne to Plymouth and is said to have attained a speed of 9 m.p.h. In 1830 a steam vehicle built by Ogle and Summers demonstrated before a special commission of the house of commons attained a speed of 35 m.p.h. on the level. Bollee, in 1872, drove a steam omnibus from Paris to Vienna at an average speed of 18 m.p.h. Six years later Bouton and Trepardoux, working with the Comte de Dion, produced a steam-driven tricycle. Serpollet followed in 1887 with a tricycle which used a "flash" boiler.

In 1884 came what is, perhaps, the most important event in the history of motoring—the introduction by Gottlieb Daimler of the petrol gas motor, in which the ignition was by means of a red-hot platinum tube, the advantages of which were speedily recognized. The chief prize in the 1894 race from Paris to Rouen went to a petrol-driven car; in the 1895 race from Paris to Bordeaux steam cars were hopelessly beaten.

In 1895 the first car designed by F. W. Lanchester, inventor of an epicyclic gear box, live axle, wire wheels, and electric ignition, was produced. A few years later came the first Wolseley. Various Daimler models were also being produced. In 1900 63 cars started in a 1,000 m. trial. Improvements in comfort and increase in speed and mechan-

ical efficiency have been continuous since then, both Great Wars having led to particularly rapid mechanical developments.

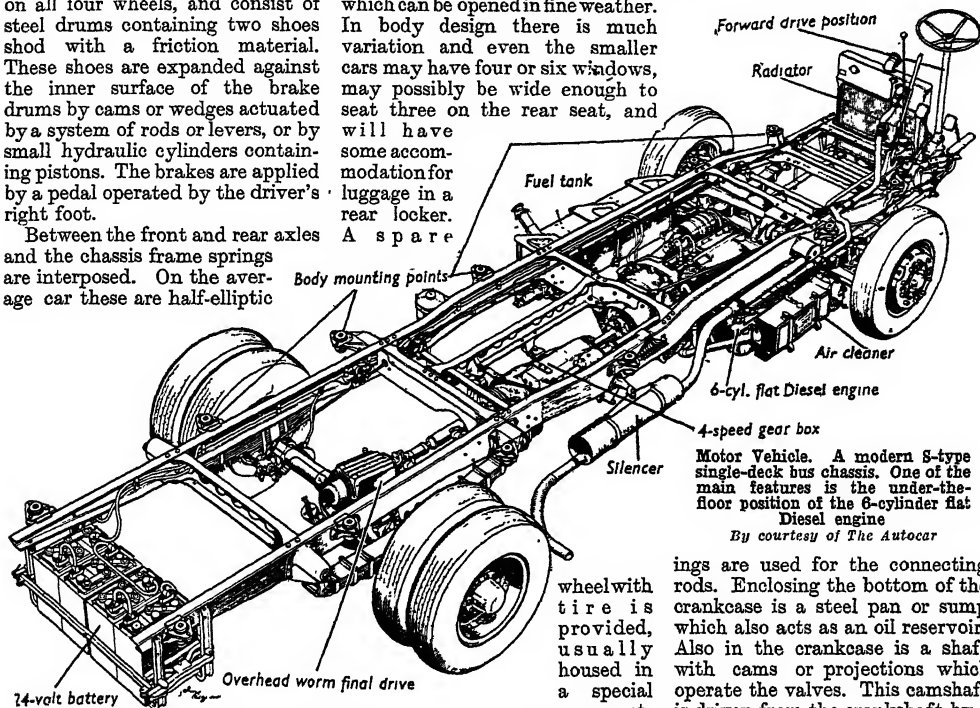
**CAR DESIGN.** There is much variation in the design of all types of motor vehicle. A typical private car of the popular 8 h.p. and 10 h.p. classes will have a four-cylinder engine with which the clutch and gear box form a unit. This is mounted at the front of a steel chassis frame and the power is transmitted to the rear axle by an open propeller shaft. In the rear axle is a spiral bevel final drive from which the half-axle shafts transmit the power to the rear wheels. The front wheels are pivoted to the ends of the axle beam, so that they can be inclined to one side or the other in order that the vehicle may be steered. The steering gear consists of a worm and worm wheel, or a variation of a worm and wheel; the worm is at the foot of the inclined steering column at the upper end of which is the steering wheel. The worm wheel is on a short shaft from the end of which depends a lever known as a drop arm. From the end of the drop arm a rod runs forward to a lever projecting from the moving portion of the front axle which carries the off-side front wheel. Thus movement of the steering wheel causes movement of the front wheel, which is linked to its fellow by a transverse rod known as a tie-rod.

Brakes are necessary to retard and arrest the motion of the car when desired. Brakes are provided

on all four wheels, and consist of steel drums containing two shoes shod with a friction material. These shoes are expanded against the inner surface of the brake drums by cams or wedges actuated by a system of rods or levers, or by small hydraulic cylinders containing pistons. The brakes are applied by a pedal operated by the driver's right foot.

Between the front and rear axles and the chassis frame springs are interposed. On the average car these are half-elliptic

which can be opened in fine weather. In body design there is much variation and even the smaller cars may have four or six windows, may possibly be wide enough to seat three on the rear seat, and will have some accommodation for luggage in a rear locker. A spare



in shape and consist of a number of leaves clipped together. Their purpose is to absorb shocks due to road inequalities, so that the wheels may follow the road surface without disturbing the forward motion in a horizontal plane of the car as a whole. The action of the springs is controlled by dampers or shock absorbers, in order to give additional comfort to the passengers.

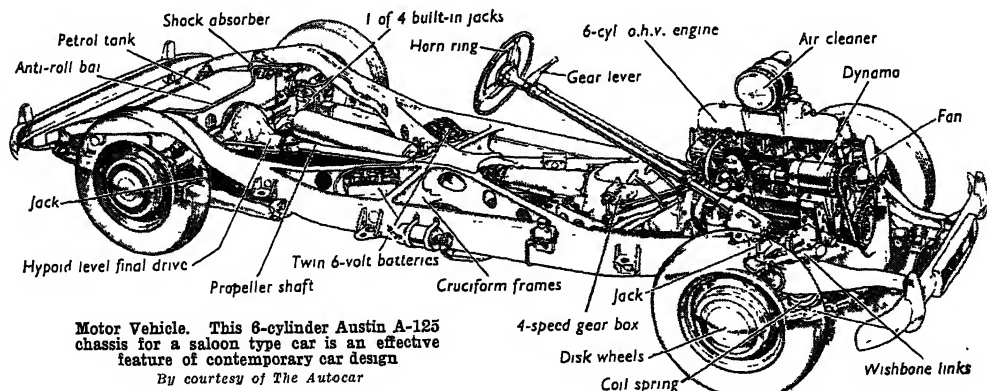
On the chassis frame is mounted the body, and in mass produced cars this is usually of steel pressings, provides seating for four passengers, has four doors, and probably a sliding roof panel

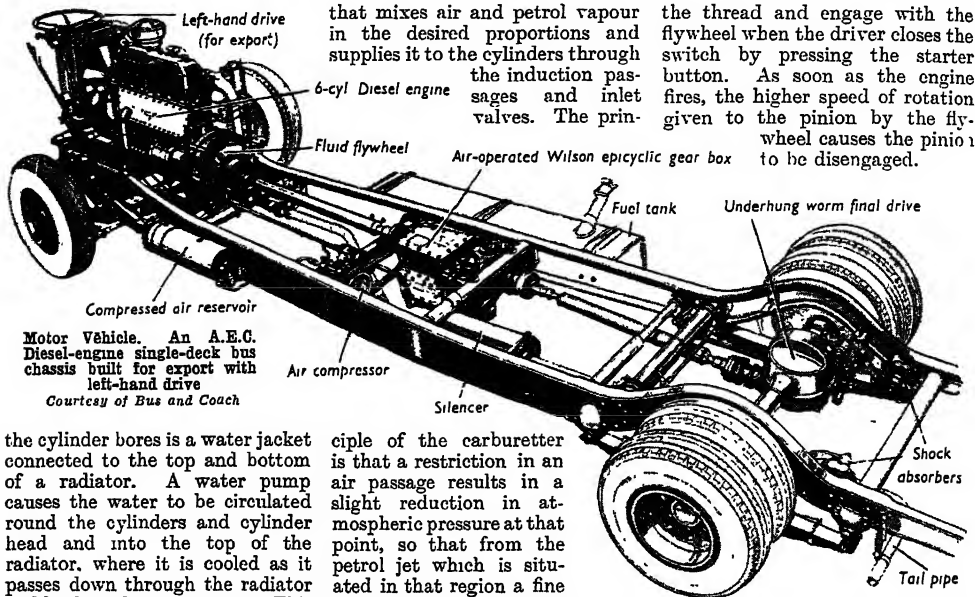
ment beneath the luggage locker.

**THE POWER UNIT.** The typical power unit has the cylinders and crankcase formed in a single iron casting. Valves may be side by side or overhead; in some cases the inlet valves are of overhead type and the exhaust valves of side type. The cylinder head is detachable, of cast iron or aluminium. Pistons are usually of one of the aluminium alloys, and the connecting rods are of high-tensile steel, usually of H-section. The crankshaft is carried in bearings formed in the crankcase, and lined with white metal; similar bear-

ings are used for the connecting rods. Enclosing the bottom of the crankcase is a steel pan or sump which also acts as an oil reservoir. Also in the crankcase is a shaft with cams or projections which operate the valves. This camshaft is driven from the crankshaft by a chain running over the sprockets on the two shafts, or by gear wheels, the drive being "geared down" so that the crankshaft makes two revolutions for one revolution of the camshaft.

From a small gear in the camshaft is driven a vertical shaft which projects down into the sump to drive the oil pump. Often the upper end of this shaft is used to drive the distributor of the coil ignition system. The oil pump delivers oil under pressure to the bearings and cylinders, filters being provided. Generally water cooling is provided. Surrounding





Motor Vehicle. An A.E.C. Diesel-engine single-deck bus chassis built for export with left-hand drive  
Courtesy of Bus and Coach

the cylinder bores is a water jacket connected to the top and bottom of a radiator. A water pump causes the water to be circulated round the cylinders and cylinder head and into the top of the radiator, where it is cooled as it passes down through the radiator and back to the water pump. This pump may have fan blades on its spindle so arranged that they draw air through the multitude of passages in the radiator block, and the pump and fan are usually driven by a rubber and canvas belt of V section passing over a pulley on the crankshaft and a similar pulley on the fan spindle. This belt drive is often made use of to drive the dynamo of the electrical system. Current from the dynamo charges a storage battery and is used for the ignition, the starting motor, the lamps, the direction indicators, the fuel gauge, and sometimes a fuel pump.

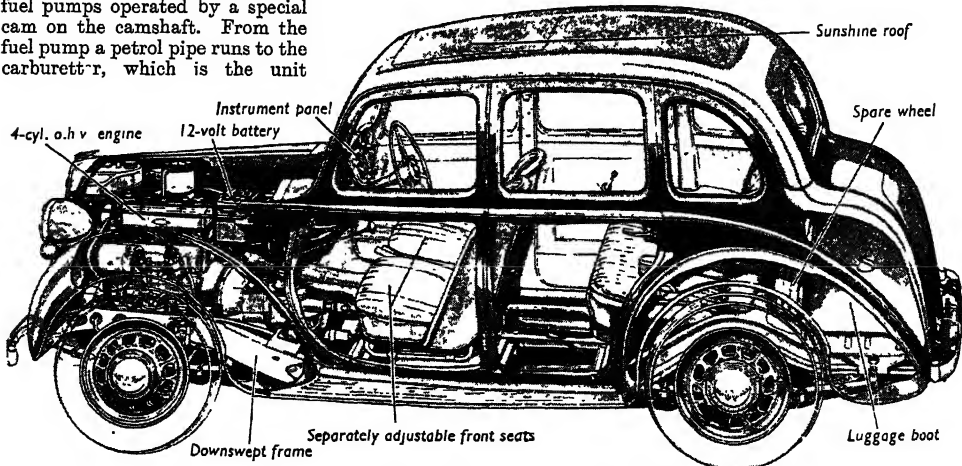
Many engines have mechanical fuel pumps operated by a special cam on the camshaft. From the fuel pump a petrol pipe runs to the carburettor, which is the unit

that mixes air and petrol vapour in the desired proportions and supplies it to the cylinders through the induction passages and inlet valves. The prin-

ciple of the carburettor is that a restriction in an air passage results in a slight reduction in atmospheric pressure at that point, so that from the petrol jet which is situated in that region a fine spray of petrol is drawn, and mixes intimately with the air. Ignition of the charge in the cylinders is by an electric spark at the sparking plugs, caused by the sudden surge of high tension current from the coil when the low tension current to the coil is interrupted by the contact breaker combined with the distributor. The starting motor has a pinion or gear wheel which engages with teeth cut in the circumference of the flywheel when the starter switch is closed. This pinion is mounted on a screw thread on the shaft of the starting motor and its inertia causes it to move along

the thread and engage with the flywheel when the driver closes the switch by pressing the starter button. As soon as the engine fires, the higher speed of rotation given to the pinion by the flywheel causes the pinion to be disengaged.

**THE CLUTCH.** Unlike a steam or electric locomotive, a vehicle driven by an internal combustion engine cannot be started from rest until the engine is running. It is for this reason that a friction clutch is necessary. The dry single-plate clutch is almost universally used. It consists of a disk of steel to which a lining of friction material is riveted. This is mounted on a splined hub on a short shaft which is co-axial with the flywheel and crankshaft, in such a manner that it is normally held in contact with the face of the flywheel by the action of springs.



Motor Vehicle. A sectional drawing of a modern four-door saloon 8 h.p. motor car  
Courtesy of The Autocar

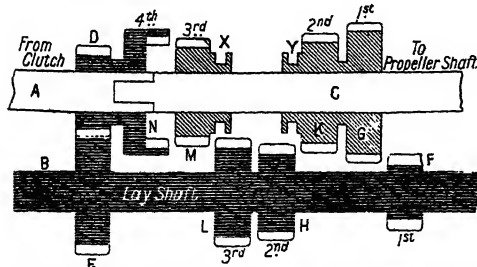
In this position the clutch is "engaged" or "in" and power is transmitted from the flywheel to the clutch shaft, which is connected to the gear box.

When, however, the driver depresses the clutch pedal with his left foot he causes the clutch disc to move slightly away from the flywheel, or to disengage. There is then no transmission of power from the engine to the gear box. There is also another possible disconnection in the transmission, i.e., that given by the gear box when its gear lever is in the neutral position, when there is no connection between input and output shafts of the gear box.

To start a motor vehicle from rest, therefore, the driver first makes sure that the gear lever is in the neutral position. He then starts the engine, and depresses the clutch pedal. Now he can engage first gear, and start the vehicle from rest by gently releasing the clutch pedal, meanwhile increasing the power given by the engine by gently depressing the accelerator, as the small pedal which opens the throttle is generally called.

**THE GEAR BOX.** As the power developed by an internal combustion engine is a function of its speed of rotation, and as more power is required in climbing a steep hill than in running on the level, the engine is made to run faster while the vehicle is running more and more slowly as a hill becomes steeper by the gear box, which allows the driver to select one of a choice of gear ratios. The average car will have four gear ratios, a few have only three, some heavy commercial vehicles may have five or six.

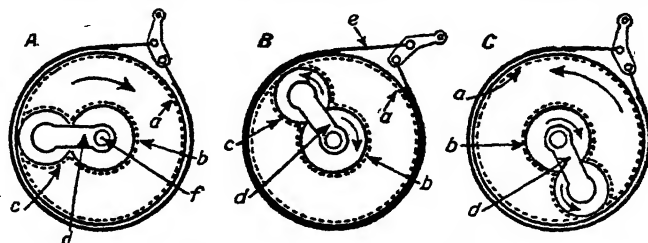
A typical four-speed box of sliding gear type is shown in Fig. 1. This type of gear box is still used on commercial vehicles,



Motor Vehicle. Fig. 1. Diagram of a four-speed sliding gear box. For lettering, see text

but most private cars have a synchromesh box. The principle of this, however, is the same, although it differs in detail con-

struction in that the gear wheels are always in mesh, but are not always in use. The wheels required to transmit power are brought into use by sliding dogs, and spring-



Motor Vehicle. Fig. 2. Epicyclic Gear: A, direct drive; B, second speed; C, reverse. a, annulus; b, sun wheel; c, planet wheel; d, arm; e, band brake; f, shaft.

loaded cone clutches cause the dogs to be running at the same speed before they actually engage. Hence changes of gear can be made without any special skill.

In the four-speed sliding gear box shown shaft A, driven by the clutch, embraces shaft C which projects from the rear of the box. To A are fixed pinion D and the internally toothed ring N. The lay or intermediate shaft B carries fixed pinions E (meshing with D), L, H, and F. Pinions M, K, and G (the two last joined together) revolve with C, but can slide along it when moved by forks in collars X, Y, forming part of the gear-changing mechanism. As shown all the sliding pinions are in their neutral positions, and A and B are able to revolve without influencing C.

To engage first gear, KG are moved to the right and G meshes with F. Power is then transmitted from A to B through the constant mesh pinions D and E, and from B to C through F and G. For second gear KG are moved to the left and K meshes with H. For third gear M is moved to mesh with L, and for top or direct gear M is slipped into N, thus locking A and C together. Reverse is obtained by another pinion, not shown, which meshes with F and G.

**EPICYCLIC GEARS.** At one time epicyclic gears were more widely used than

at present, but it is not unlikely that they will again become well known. In the epicyclic gear (Fig. 2) the sun wheel is coupled direct

to the crankshaft of the engine. Meshing with the sun wheel are planet wheels which revolve on spindles carried by an arm on the driven shaft. Also meshing with

the planet wheels is a ring gear or annulus to which an external brake band may be applied.

The operation of the epicyclic gear is as follows: if the whole mechanism is locked together so that it revolves as a whole, direct drive is obtained and the driven shaft will run at the same speed as the crankshaft. If, however, the brake band is applied to the annulus so as to prevent it from rotating, then the rotation of the sun wheel by the engine causes the planet wheels to rotate on their spindles in the opposite direction. They can do this, however, only by running round the stationary annulus in the same direction of rotation as the sun wheel, thereby carrying their spindles, and the arm and shaft to which the spindles are attached, in the same direction. Since the planet wheels are smaller than the sun wheel the engine will revolve a number of times before the driven shaft completes one revolution. In other words, therefore, there is a gear reduction between the crankshaft and the driven shaft.

The simple epicyclic train described is in reality a two-speed gear inasmuch as it gives direct drive and a reduction. Additional trains would provide further reductions if desired. This has, in fact, been done in the Wilson pre-selective gear box, and in the Cotal electro-magnetically controlled gear box in which electro-magnetic clutches are used instead of band brakes.

**THE DIFFERENTIAL.** From the gear box power is transmitted by a universally jointed propeller shaft to the final drive in the rear axle casing. With this is incorporated the differential, which is necessary to allow the drive to be transmitted to the wheels in a manner which



leaves them free to revolve at different speeds when travelling on a curve. Fig. 3 explains the principle of the gear.

Bevel B on the propeller-shaft S meshes with C, which carries round with it bevels D<sup>1</sup> and D<sup>2</sup>, free to revolve on centre pins

and in gear respectively with E<sup>1</sup>, keyed to A<sup>1</sup>, and E<sup>2</sup>, keyed to A<sup>2</sup> (A<sup>1</sup> and A<sup>2</sup> are the half-axle shafts). Assume the driving wheels to be off the ground and C to revolve 20 times per minute, then A<sup>1</sup> and A<sup>2</sup> will both be drawn round by D<sup>1</sup> and D<sup>2</sup> at that rate. If the right-hand wheel be held, E<sup>2</sup> becomes a rack on which D<sup>1</sup> and D<sup>2</sup> run, and, as their axes are half-way between E<sup>1</sup> and E<sup>2</sup>, E<sup>1</sup> and A<sup>1</sup> revolve 40 times a minute. The average speed of E<sup>1</sup> and E<sup>2</sup> is still the same as that of C; and this averaging condition exists when either wheel runs faster than the other.

The bevel pinion B and crown wheel C, which have curved teeth on up-to-date vehicles, are called spiral bevels. These run more quietly than bevels with straight teeth. Some commercial vehicles have a worm and worm wheel in place of a spiral bevel.

To damp out vibration and prevent it from reaching the occupants of the vehicle, it is usual to mount the power unit in the chassis frame on rubber blocks which are bonded to steel brackets by a special process. Frequently there will be three such mountings, one at each side of the engine at the front, and a third at the rear of the engine or beneath the gear box.

**CHASSIS FRAME.** Channel section steel pressings are used for the construction of the chassis frame; a usual design consists of two main longitudinal members strongly braced by a number of transverse members. Cruciform cross bracing at about the middle of the chassis just to the rear of the gear box is general. The main members may taper outwards from front to rear in order to give room for the front wheels to move for steering, or the main members may be inswep at the front for the same reason. Over the rear axle the side members are generally upswept to give clearance for axle movement, an alternative being to sweep the frame down beneath the axle.

In a car with independent front springing there will be no axle beam, and from a strong front cross member of the frame there will project on each side two wishbone links or pivoted levers, one above the other, to the ends of which the steering heads are pivoted. A coil spring may be interposed between the lower link and the frame, or the

lower link may be attached to one end of a torsion bar of which the other end is anchored to a bracket on the frame. In this case the springing effect is given by the twisting of the bar. Independent suspension for the rear wheels is sometimes adopted.

In a few cases a separate chassis frame is dispensed with by making the steel body shell sufficiently strong to withstand the stresses normally taken by the frame. The body is suitably reinforced to receive the springs and also the power unit. The advantage of this form of construction is a saving in weight; it is used also in single-deck buses and coaches.

**DIESEL ENGINE.** Many passenger and load carrying vehicles are powered by the compression ignition or Diesel engine, burning an oil fuel instead of petrol. The carburettor is replaced by a fuel injection pump and there is no ignition system. On the induction stroke air alone is drawn into the cylinders, not a mixture of air and fuel. On the following compression stroke the air is compressed to such an extent that it attains a temperature which is sufficient in itself to ignite the oil fuel, when this is injected in the form of a fine spray at the top of the compression stroke. The compression ratio may be as high as 16 to 1, or higher, as compared with an average of about 6.5 to 1 for a petrol engine. Advantages of the Diesel engine are its lower fuel cost and the reduced risk of fire owing to the nature of its fuel.

On some vehicles, both private cars and commercial, the transmission system may have a fluid flywheel or hydraulic coupling in place of a friction clutch. The hydraulic coupling consists of a driving member or impellor and a driven member, the two being encased and containing oil. The impellor is formed as part of the engine flywheel and it has in it a series of radial vanes. The driven

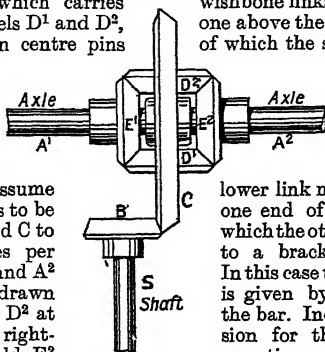
member is similarly vanned and is set close to the impellor so that the spaces between the vanes form a series of pockets or cells. Rotation of the impellor when the engine is running causes the oil to be circulated in the cells in the form of a vortex; kinetic energy is imparted to the oil by the impellor and is, in turn, given up by the oil to the driving member which is therefore also caused to rotate. There is thus no direct mechanical connexion between the impellor and the driven member; hence the action of the fluid coupling is extremely smooth. Usually the fluid coupling is used in conjunction with the Wilson pre-selective epicyclic gear box.

#### Variations in Design

Large cars may have six-cylinder-in-line engines, or eight-cylinder engines with the cylinders either in line or arranged in two blocks of four in V formation. Engines with 12-cylinders set in two blocks of six in V formation have also been used. The spiral bevel final drive of the rear axle may be replaced by a hypoid bevel which has the bevel pinion centre line set below the centre line of the crown wheel; the advantage of this is that the propeller-shaft is thus located a little lower in the chassis, and no tunnel is necessary to give clearance to the propeller-shaft, and it is therefore possible to have a perfectly flat floor in front of the rear seats.

**COMMERCIAL VEHICLES.** In general, vehicles for load carrying follow the same lines of design as private cars, especially in the smaller sizes. In such vehicles petrol engines are used, because it has not been found easy to produce a very small Diesel engine at an economical price. The problem of fuel injection is alone extremely difficult in very small engines, because the quantity of fuel required to be injected is so minute that there is great difficulty in producing an injection pump of sufficiently small capacity. In the larger sizes, however, the Diesel is widely used for load carrying and public service vehicles.

The smaller load carrying vehicles are four-wheelers; for heavy loads it is common to use six- or eight-wheelers, that is, vehicles with three or four axles. When three axles are used the two rear axles are set close together, and usually both are driving axles, although sometimes only the front one of the two is a driving axle, the rear one serving only to carry part of the load.



Motor Vehicle.  
Fig. 3. Diagram  
of a differential  
gear. See text

Vehicles with four axles have two at the front, the four wheels all steering, and two at the rear.

Many commercial vehicles have servo-motors to supplement the driver's foot pressure on the brake pedal. Servo-motors are cylinders containing pistons linked to the brake mechanism. The cylinders are connected to the engine induction system through valves and a vacuum reservoir. The engine draws air out of the vacuum reservoir, so that a partial vacuum is caused therein. Then when the driver applies his foot brake the control valve places the vacuum reservoir in connexion with the cylinder, and the piston moves up the cylinder, thus applying more force to the brake gear than the driver could exert unaided.

**Motor Vessel.** Sea-going ship powered by Diesel or Diesel-type compression engines using heavy fuel oil. The first of any size to go into regular service was the 1,000-ton *Selandia*, launched in Great Britain in 1912, since when motor vessels of considerable tonnage have been built for commercial purposes. Increasingly popular as fast cargo liners, they show economy of bunker space, rapidity of refuelling, and cleanliness. Their disadvantages against the steamship are that their engines require more maintenance, and, unless carefully designed in relation to the hull, are liable to cause excessive vibration. Power plants for early motor vessels were made in Switzerland; then came the German Krupp and M.A.N. engines. The first British marine Diesel was the Duxford opposed piston engine. The average motor vessel displaces 9,500 tons and has a speed of 15 knots. Approximately one-third of the ships under construction in 1947 were motor vessels.

**Motril.** Town of Spain, in the prov. of Granada. It stands on a small river about a mile from the



Motril arms

Mediterranean, 34 m. by road S. by E. of Granada. In a fertile district, where cotton, sugar cane, and sugar beet are grown, it has sugar mills and manufactures cotton, flour, soap, wine, and brandy. It exports dried figs, almonds, barley, etc., and there are antimony, lead, zinc, and copper mines in the neighbourhood. The ancient port of Granada, the port of Motril now implies Calahonda and the roadstead of Baradero. Pop. 17,000.

**Mott, Sir Frederick Walker** (1853-1926). British physician. He was born at Brighton, and received his medical education at University College and Hospital, London. A specialist in neurology and mental subjects, he was Croonian Lecturer at the Royal College of Physicians, 1900. He served in the R.A.M.C. during the Great War, and was consulting physician to Charing Cross Hospital. Among his publications are *The Brain and the Voice in Speech and Song*, 1910; *Nature and Nurture in Brain Development*, 1914; *War Neurosis and Shell Shock*, 1919. He was knighted in 1919, and died June 8, 1926.

**Mott, John Raleigh** (b. 1865). American evangelist. Born in New York, May 25, 1865, he assisted in



J. R. Mott, American evangelist

the formation of the student volunteer movement for foreign missions, and founded and became general secretary of the world's student Christian federation, 1895. General secretary of the international committee of the Y.M.C.A., 1915-32, he was president of the world alliance of the Y.M.C.A. in 1926, and from 1910 to 1941 chairman of the international missionary council, presiding at the world missionary congresses at Edinburgh, 1910, Jerusalem, 1928, and Madras, 1938. He was awarded a half share of the Nobel Peace prize in 1947, and was honoured by the governments of France, America, Japan, China, Italy, Poland, Sweden, and Finland. His many books include *Evangelisation of the World in This Generation*, 1900; *Future Leadership of the Church*, 1908; *World's Student Christian Federation*, 1923; *Liberating the Lay Forces of Christianity*, 1932; *The Larger Evangelism*, 1944.

**Motta, Giuseppe** (1871-1940). Swiss statesman. Five times president of the Swiss federation, he was born Dec. 29, 1871, at Airolo, Canton Ticino. He received his early education partly in Italy and partly in Switzerland, and later graduated in law at Heidelberg. At the age of 22 he was elected to the council of state, becoming a federal councillor in 1911. For the 23 years during which he held cabinet office he dominated Swiss politics; and he was president in 1915, 1920, 1927, 1931, and 1937.

In 1920 he was appointed foreign minister and his country's chief representative at the League of Nations. He died Jan. 23, 1940.

**Motte.** Central mound sometimes found within the walls of a castle and characteristic of a Norman fortress. From an encircling ditch earth was removed to raise a platform, the bailey enclosed within a palisaded bank, and also a mound on which the commander's tower stood. Motte-and-bailey earthworks were erected on the site of Cardiff Castle c. 1090.

**Mottistone, John Edward Bernard Seeley, 1st Baron** (1868-1947). British politician.

Born May 31, 1868, and educated at Harrow and Trinity College, Cambridge, he was called to the bar in 1897. Liberal M.P. for Isle of Wight, 1900-06, and during 1923-24, he represented Abercromby div., Liverpool, 1906-10, and Ilkeston div., Derby, 1910-22. Under-secretary for the colonies, 1908-10, and under-secretary for war, 1911, he was secretary for war, 1912-14. After serving in the First Great War, he was under-secretary for air and president of the air council, 1919. He was raised to the peerage, 1933. His publications included *Adventure*, 1930; *Fear and Be Slain*, 1931; *For Ever England*, 1932; *Oaths of Happiness*, 1938. He died Nov. 7, 1947, and was succeeded by his son, Henry John Alexander Seeley (born May 1, 1899).



Lord Mottistone, British politician

**Motto.** In heraldry, short, pithy sentence, sometimes a single word, usually placed on a scroll beneath the coat of arms or crest, or round the shield. They were personal to the bearer, but were commonly perpetuated in families.

The motto differs from the *Guerre*, war cry, or slogan, which is placed on a scroll above the crest or badge. See *Heraldry*.

**Mottram, Ralph Hale** (b. 1883).

British novelist. Born at Norwich, Oct. 30, 1883, he was educated at Lausanne, and worked in a bank for many years. He established his reputation with



R. H. Mottram, British novelist

The Spanish Farm, 1924 (awarded the Hawthornden prize) which with *Sixty-Four, Ninety-Four!* 1925, and *The Crime at Vanderlynden's*, 1926, formed a trilogy, describing life in Holland during the First Great War. Mottram's later novels included *Our Mr. Dormer*, 1926; *The English Miss*, 1928; *Early Morning*, 1935; *The World Turns Slowly Round*, 1942; *Visit of the Princess*, 1945. His other publications included a life of John Crome, 1931; *East Anglia*, 1933; and *Buxton the Liberator*, 1946.

**Motza.** Name given to the unleavened bread eaten by the Jews at the Passover. There are about seven large, dry cakes or biscuits to a pound of motza bread, one egg being used in each cake. It is made in the home, or can be bought at a Jewish grocer's or baker's, in which cases the motza should be soaked in water and drained before eating. See Passover.

**Mouflon** OR **MOUFFLON.** Species of European wild sheep, *Ovis Aries*, found only in Corsica and Sardinia. It is about 28 ins. high at the withers, and the wool of the upper parts is reddish brown, with white on the underparts. The curved horns in the male sometimes reach 3 ft. in length. The animals are found in flocks on the highest peaks of the hills, and are very difficult to approach.

**Moujik.** Russian peasant, from the Russian *muzhik*. The word was formerly used to describe a loose fur cloak worn by ladies, similar to those worn by Russian peasants *Pron. moo'-zhik*.

**Mould.** Collective term for any fluffy or cushiony growth of fungi appearing on dead or decaying vegetable matter—especially if damp, e.g. leather, bread, fruit, etc. Such fungi are nearly always in the "imperfect" stage, i.e. they reproduce almost exclusively by asexually formed spores and rarely form sexual organs. Examination under a lens or microscope shows a dense mass of tangled threads (*hyphae*) which constitute the fungus body or *mycelium* and from this there generally arise a number of upright *hyphae* bearing spores either enclosed in a sporangium or in chains at the tip of the *hyphae*. Some moulds have now been shown

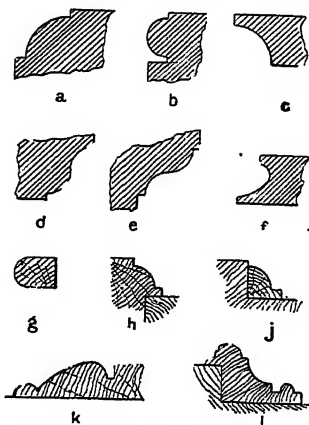
to be stages of sexually-reproducing fungi principally Ascomycetes. The commonest moulds are the green moulds, i.e. species of *Penicillium*, some of which assist in the "ripening" of cheese such as gorgonzola, and others can cause fermentation in sugary liquids; decaying fruit is generally covered with brownish cushions of *Monilia*; the black pin mould *Rhizopus* and the white mould *Mucor* occur on jams, bread, decaying vegetables, etc. Moulds are not confined to an aerial habitat, but also occur in aquatic situations. The most familiar example is probably the white "fur" that often develops on fish—particularly if kept in small jars with infrequently changed water. This is a species of *Saprolegnia*, but there are a number of other water moulds which may attack many forms of water life. See Fermentation: Penicillin.

**Mould.** Piece of apparatus used for shaping molten or plastic material by the process of casting. Metals may be made into suitable shapes by heating them until they are completely

liquid; the liquid metal is then poured into a mould, which is so formed that when it is removed it leaves the cast metal in the desired shape. The mould is provided with a "runner," down which the metal is poured, and a "riser," so that the air may be completely displaced; the pieces of metal solidified in these spaces are attached to the casting and they must be cut off before the article is ready for use. Moulds are made from carefully selected and graded sands, which are first sieved into the mould boxes. See Bronze Statuary; Casting; Foundry; Glass; Plaster Cast; Plastics.

**Moulding.** In architecture and joinery, the surface formed on any piece of stone, timber, or other material by casting or cutting according to a continuous pattern; by extension, the piece of material so moulded. The mouldings in Greek architecture have been elaborately classified as the ovolo, ogee, cyma recta, torus, scotia or trochilus, cavetto, astragal, and fillet or annulet. The cyma recta and cavetto were mainly used as purely decorative finishings; the ovolo and ogee as supports to other members of the composition; the torus

and astragal for the tops and bottoms of columns; the scotia as a means of separating one part of a base from the other; the fillet for every kind of architectural profile.



**Moulding.** Types in use in architecture and joinery. a, ovolo; b, torus; c, cavetto; d, ogee or cyma recta; e, cyma reversa or reverse ogee; f, scotia; g, bead; h, solid or "laid-in"; moulding contrasting with i, stuck or planted moulding; k, compound moulding, quirk, ovolo and bead; l, bolection moulding.

Roman and Renaissance forms of moulding were based on the Greek, and certain classic mouldings were adopted by the Gothic architects, who used mouldings of every description lavishly. The medieval mason worked according to a system almost as rigid as the classical one, though the far greater variety drawn upon might point to a contrary conclusion. In Britain Norman architects usually used the plain cylindrical roll; but the introduction of the pointed arch and lancet windows opened the way for numbers of new forms. These were employed so systematically at different points that the dates of certain Gothic buildings can be told from the mouldings alone. Early English mouldings, which include the roll, fillet, and dog-tooth, are generally of finer workmanship than those of later date. Perpendicular work is flatter and harder. See Panelling.

**Moulin Rouge, LE** (Fr., the red mill). Parisian place of amusement. Situated in the Boulevard de Clichy, and built on the site of the old Bal de la Reine-Blanche, it was opened Oct. 5, 1889, and destroyed by fire Feb. 28, 1915. A spacious establishment, attached to which was a magnificent garden, its daily programme included a concert, followed by dance music. The Moulin Rouge owed its name to



**Mouflon.** Ewe and lamb of the Corsican wild sheep.

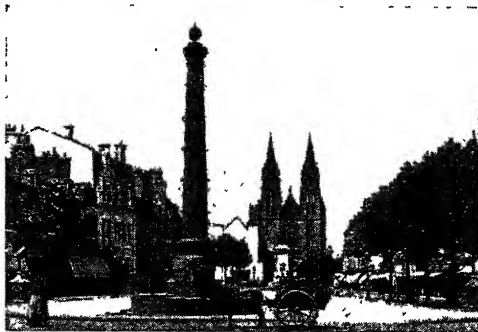
the windmill which towered above the entrance, the sails of which were illuminated by red lights. Rebuilt in 1921, it remained open throughout the Second Great War, and is still unique among Parisian entertainments.

**Moulins.** City of France. The capital of the dept. of Allier, it stands on the river Allier, 36 m. by rly. S.S.E. of Nevers, and is a rly. junction. Cutlery, textiles, hats, and glass are the chief manufactures. The Gothic cathedral of Notre Dame has two fine towers. Its choir was originally the chapel of the castle, and the chief of its many treasures is a beautiful triptych. The church of the Sacré Coeur is modern. Other buildings include the town hall, palais de justice, and a 15th century belfry. There are remains of a castle, once the residence of the Bourbon family. Therein is a museum containing the famous Bible, dating from 1115, from the priory of Souvigny. From 1368 to 1527 Moulins was the capital of the Bourbonnais. Pop. 23,254.

**Moulmein** OR MAULMAIN. Seaport of Burma, in the Amherst dist. It is situated near the mouth of the Salween, sheltered by Bhilu Island from the Gulf of Martaban, but is rainy during the monsoon. In 1824 it was a

fishing village, but it is now the second port of Burma, with a great export of teak floated in rafts down the Salween, and of rice. It has connexion by rly. with Pegu and Rangoon.

Raided by Japanese aircraft in Jan., 1942, Moulmein was evacuated by British forces on Jan. 31. The town remained in enemy



Moulins, France. Place d'Allier, looking towards the church of the Sacré Coeur

hands until the surrender of the Japanese forces in Burma on Sept. 13, 1945. Pop. 65,506.

**Moulting.** Name given to the periodical shedding of the outer covering of animals. The period is essentially one of growth, for the shedding of the old coat is due to the beginning of the growth of the new. It is best

known in the birds, which usually shed and renew their feathers after the nesting season. This is apparently a time of ill-health and of strain on the constitution, and birds are usually silent and inactive during it. Moulting is also seen in the periodic shedding of the carapace in growing crustaceans, in the sloughing of the skins of snakes, and in the shedding of the skins of myriapoda, spiders, and insects, the process being known as ecdysis. Many mammals also shed their hair in the spring and grow a thicker coat again at the approach of winter. See Animal Mammal.

**Moulton,** RICHARD GREEN (1849-1924). Anglo-American man of letters. Born at Preston, Lancashire, May 5, 1849, he was educated at Christ's College, Cambridge, and

London university. He was a university extension lecturer, 1874-90, and in 1891 he settled in the U.S.A. In 1892 he was made professor of English literature at Chicago, and in 1901 head of the department of general literature. A scholarly interpreter of Shakespeare, he wrote Shakespeare as a Dramatic Artist, 1885, 3rd ed. 1897; Shakespeare as a Dramatic Thinker, 1907; The Modern Study of Literature, 1915. He was also responsible for a rearrangement of the Bible according to modern ideas. He died Aug. 15, 1924.

**Moultrie.** City of Georgia, U.S.A. and co. seat of Colquitt co. Situated in the S. part of the state, it is served by the Georgia and Florida, the Atlanta, Birmingham and Coast, and other rlys. It is the trading centre of a farming area and has cotton mills, sawmills, and meat-packing plants, and makes turpentine and clothing. It was founded in 1856 and incorporated in 1859. Pop. 10,147 of whom about 40 p.c. are negroes.

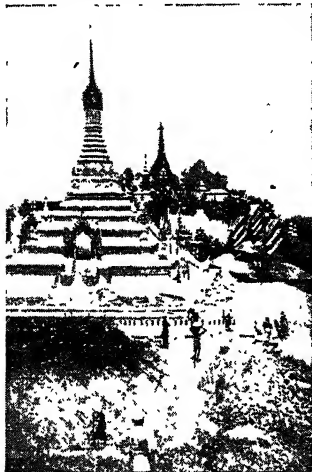
**Mound.** Hillock of earth or stones, especially when heaped up artificially. In the Mississippi basin and the American Gulf states are numerous pre-Columbian structures by aboriginal agricultural peoples, hence called mound-builders. The mounds are conical, pyramidal, animal-shaped, or mural. Their use was sepulchral,

or ritual, domiciliary, or defensive. The conical grave-

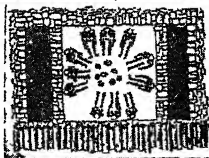
mounds, 6 ft. to 300 ft. across, and up to 100 ft. high, resemble the European barrow and tumulus. The largest, at Grave Creek, Moundsville, W. Virginia, 320 ft. across, 79 ft. high, has two stone-capped timber chambers; one with two skeletons, the other—30 ft.

above it—with one. Among the contents of the graves were shell beads and copper bracelets.

Cahokia mound, Illinois—the largest U.S. earthwork—is 1,080 ft. by 710 ft., 99 ft. high, and surrounded by about 70 lesser mounds. Etowah mound, Georgia, is 380 ft. by 300 ft., 61 ft. high. The effigy mounds, mostly in Wisconsin, represent panthers, turtles, birds, and other forms, often associated with mural earthworks up to 900 ft.



Moulmein, Burma. New and old pagodas, the former in foreground



Mound. Section and plan of a mound constructed by N. American tribes at E. Dubuque, Illinois. The vault measured 13 ft. by 7 ft. and contained 11 skeletons



Mound. Two further examples of mounds constructed by N. American tribes. Upper picture, Avondale mound, Washington co., Mississippi, a typical series of mound tombs. Lower picture, burial of a chieftain, illustrated by De Bry (c. 1620). Tribesmen mourn around the mound, about the base of which arrows are stuck in the ground. On the mound is the chief's shell cup

long. The so-called Elephant mound bore a much-discussed effigy 140 ft. long. In Ohio the Serpent mound bore a sinuous embankment 4 ft. high, 1,330 ft. long; the so-called Alligator mound may represent a lizard. In Georgia two represent birds. The strongholds, comparable with British earthworks, notably in Ohio, exhibit remarkable precision in their geometrical forms. The trees on some mounds, when first observed by Europeans, date them at least two centuries before the discovery of America; some are undoubtedly older. The cultural remains point to immigrant influences from the W. which farther S. developed the Mexican *teocalli* and worship of serpent and sun. See *Celt; Tumulus*.

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**Mound Bird.** Popular name for the Megapodiidae, a family of game birds that deposit their eggs in mounds of decaying vegetable matter, where they are hatched by the combined heat of the sun and of the decomposition of their surroundings. There are about 15 species, found mainly in Australasia, notably the brush turkey.

**Moundville.** City of West Virginia, U.S.A., the co. seat of Marshall co. On the Ohio river, 11 m. S. of Wheeling, it is served by the Baltimore and Ohio rly., and river steamers. For the remarkable Indian burial mound after which the city is named, see *Mound*, Pop. 14,168.

**Mounet-Sully, JEAN** (1841-1916). French actor. He was born at Bergerac, Feb. 27, 1841, and made his first appearance as King Lear at The Odéon in 1868. From 1872 he was principal actor at the Comédie Française. He was regarded by connoisseurs as one of the greatest tragedians of the 19th century. He died in Paris, March 1, 1916.

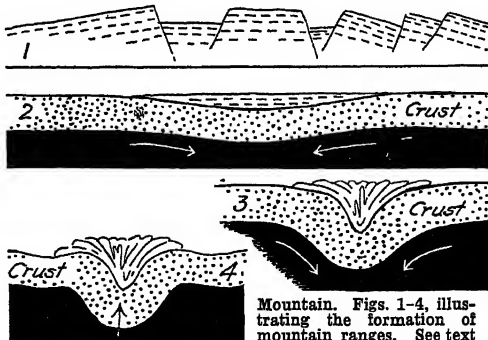
**Mount Abu.** The culminating point of the Aravalli Hills, India. It is in Rajputana, 68 m. W. of Udaipur. The sanatorium, known by the same name as the mountain on which it stands, is 3,945 ft. in elevation. There are two fine

temples built by the Jains. Of white marble, they date from the 12th and 13th centuries, and are held to be the finest extant specimens of Hindu architecture. The altitude of Mt. Abu is 5,650 ft.

**Mountain.** Term used, somewhat loosely, to describe an elevated portion of the earth's surface. Usage depends on local circumstances, and an isolated elevation of less than 1,000 ft. is often termed a mountain, though elsewhere ground well over that height may be referred to as hills.

Mountains have been formed by accumulation; by block faulting; by folding; by erosion. Mountains of accumulation are typically volcanoes (*q.v.*), where the cone or dome is built up of ashes and lava flows ejected from one or more craters. Some high mountains are of this type: Cotopaxi, 19,613 ft., in Ecuador; Orizaba, 18,240 ft., in Mexico; Mts. Shasta and Rainier, both over 14,000 ft. and other peaks in the Cascade range of west U.S.A.; Elburz, 18,500 ft., in the Caucasus; Vesuvius, 3,890 ft.; and island mts. such as Teneriffe, 12,190 ft. and Mauna Loa, Hawaii, 13,760 ft. above sea level. The last rises from the floor of the Pacific with a depth of over 15,000 ft. making a total mountain height above its base of approx. 30,000 ft.

Block fault mountains are features resulting from the elevation or tilting of fragments of the earth's crust between faults (*q.v.*). The earth movements involved are more or less vertical, and while the elevated ridges are formed by uplift, the valleys either lie along



Mountain. Figs. 1-4, illustrating the formation of mountain ranges. See text

the line of faults between adjacent blocks, or along narrow down-faulted strips. The Basin ranges of the west U.S.A. and the flanking Sierra Nevada and Wasatch mts. have been formed in this way (Fig. 1). The Ruwenzori mts. of







Mountain Ash. Flower and leaves of the tree also called the rowan

**Mountain Ash** OR **ROWAN TREE** (*Pyrus aucuparia*). Small tree of the family Rosaceae. It is a native of Europe, including Great Britain, and the Canaries, N. and W. Asia,

and N. America. Its leaves are divided into six to eight pairs of slender leaflets. The small creamy-white flowers are produced in numerous clusters, and are succeeded by bright scarlet fruits.

**Mountain Ash.** Urban dist. of Glamorganshire, Wales. It is 4 m. S.E. of Aberdare, and 18 m. N.N.W. of Cardiff, and stands on the Cynon, a tributary of the Taff. It is served by rlys. The urban district includes a number of mining villages, among them Mountain Ash itself, Abercynon, and Cwmpennar, that became populous with the opening of coal mines in the 19th century. The Welsh name for Mountain Ash is Aberpennar. Market day, Sat. Pop. 32,370.

## MOUNTAINEERING AS A SPORT

H. E. Kretschmer, late member of the Alpine Club

*An account of the nature of this exhilarating but hazardous sport, and the equipment necessary for it, as well as a history of its development. See also Alps; Everest; Himalayas; Matterhorn; Mont Blanc; Rock-climbing; Skiing, etc.*

Mountaineering is the art of ascending mountains. In its widest sense it embraces all forms of movement in mountainous country. The art lies in overcoming obstacles and perils safely, and with the greatest economy of effort compatible with the use of only a reasonable minimum of extraneous aids.

The weather in the mountains is more uncertain and changeable than in the plains. Surprising extremes of heat and cold may be experienced in a short space of time. Gales and blizzards may spring up with sudden violence. High winds, lightning, and mists become particularly dangerous on exposed ground. Mountains are subject to a continual process of decay and erosion which loosens pieces of rock, ice, and other matter. These may drop from ridges and other steep places, often just after the hottest part of the day. On high mts. there are usually some places which are under continuous bombardment by falling stones at certain hours of the day. Loose rock may also become dangerous to the unwary if used as support for hand or foot. Avalanches may occur where driven snow has been compacted into wind slab, where new snow has not bonded with layers of old snow, etc. Steepness, exposed aspect, bluffs of rock may be contributory causes of the instability of snow slopes. The imperceptibly slow, but constant, movement of glaciers, combined with unevenness of ground over which they flow,

causes the formation of crevasses which are often very deep, and may be hidden under treacherously insecure snow bridges.

Essential extraneous aids include weatherproof clothing and special footwear. In steep and exposed places a rope is necessary for safety. The use of oxygen apparatus to facilitate breathing at exceptionally high alts. (above 25,000 ft.) constitutes a borderline case of what is considered a reasonable mountaineering aid. All equipment should be bought from reputable specialists. Outer clothing should be of tough, closely-woven texture and it must allow complete freedom of movement. It must afford protection against wind. The boot soles should either consist of a special rubbery composition with moulded nail-like protuberances or be nailed. An ice axe is carried for cutting steps in ice and hard snow. When thrust into a slope it can be used to arrest a slip before it becomes a disastrous fall. It is also used for balance, for sounding snow, and as a belaying point for the rope. Climbing ropes and their uses are dealt with under Rock Climbing. To cross glaciers with hidden crevasses safely, roped parties of more than two persons are necessary.

For walking with security on ice slopes, ice claws or crampons are attached to the boot and this may save hours of step cutting. Dark glasses are essential to protect the eyes from ultra-violet rays reflected from snow at high alts.

Mountaineering proper is primarily concerned with overcoming the specific difficulties presented by some particular part of a mountain. The actual ascent is only a secondary objective. For this, rock climbing or snow and ice craft or both are required. The gymnastic exercises and dexterities of the sport are relatively easy to acquire, but acquisition of the essence of mountain craft, which is route finding, judging relevant objective and subjective conditions, and ability to move at all times with economy of effort, requires a long apprenticeship.

Mountaineering expeditions should be undertaken only by persons who are physically fit and capable of dealing with the difficulties to be encountered. Parties with insufficient knowledge and experience of mountains should engage a professional guide. In most countries there is a system of licensing to ensure the competence of local guides. Generally there are fixed tariffs for the services of a guide on particular ascents.

**HISTORY.** The earliest recorded mountaineering feats were of a military nature, such as the crossing of the Alps in 218 B.C. by Hannibal's army. Among others reported as early climbers are Philip III of Macedon (181 B.C.), and the emperor Hadrian (126 B.C.). Petrarch ascended Mt. Ventoux in 1336. Antoine de Ville was said to have climbed the rocks of Mt. Aiguille in 1492. Naturalists, clerics, and artists were the first promoters of mountaineering. In 1760 De Saussure, a French scientist, offered a prize for the first ascent of Mt. Blanc. This was gained by Michael Paccard and Jacques Balmat in 1786. Other important first ascents followed in the Alps with the Grossglockner (1800), the Ortler (1804), the Jungfrau (1811), and the Monte Rosa (1819). From the middle of the 19th century the English played an important part in mountain exploration. The ascent of the Wetterhorn in 1854 by Charles Wills marks the beginning of mountaineering as a sport. In 1857 the Alpine club was formed in London to enlarge "the community of feeling among those who in the life of the high Alps have shared the same enjoyments, the same labours, and the same dangers." Similar clubs were soon founded in other countries, and in 1939 European Alpine clubs had an aggregate membership of over 120,000.

John Tyndall, Charles Hudson, F. E. Tuckett, E. S. Kennedy,

Leslie Stephen, and other English mountaineers were the pioneers of mountaineering, the outstanding event of which was Whymper's conquest of the Matterhorn in 1865. Soon every major peak in the Alps had been climbed. A second generation of Alpine explorers, among whom Guido Rey, Mummery, Freshfield, Moore, Conway, Coolidge, the Zsigmondy brothers, Meier, Purtscheller, and G. Winthrop Young were foremost, set about conquering the old peaks by new routes with such effect that by the turn of the century Mt. Blanc, for instance, had been climbed by more than 20 routes.

The Caucasus, including the highest mts. in Europe, was first explored by Freshfield's party in 1868. Conway started the exploration of Arctic and Spitsbergen mountains, Whymper those of Greenland, Shackleton those of the Antarctic. The German, Wilhelm Reid, climbed Cotopaxi in 1872, Whymper climbed Chimborazo in 1880. In Africa Ruwenzori was scaled by the duke of Abruzzi and Mt. Kenya by MacKinder. The highest peak of N. America, Mt. McKinley, was not climbed till 1913. W. W. Graham's numerous Sikkim ascents in 1883 were the beginning of the Himalayan exploration. He was followed in 1892 by Conway's Karakoram expedition. Mummery lost his life in an attempt to climb Nanga

Parbat. Douglas Freshfield, the Workmans, the duke of Abruzzi, and T. G. Longstaff contributed greatly to the early exploration of the Himalayas. A British party climbed the 25,447 ft. summit of Mt. Kamet in 1931, Americans climbed Minya Konka (25,256 ft.) in 1932. The highest peak yet climbed is Nanda Devi (25,645 ft., 7,814 metres). Assaults by Americans on Mt. Godwin-Austen, or K 2 (28,278 ft.), by Germans on Nanga Parbat (26,629 ft.) and Kinchinjunga (28,146 ft.), and by Frenchmen on Dhaulagiri (26,828 ft.) were unsuccessful. Several attempts have been made to reach the 29,141 ft. summit of Everest.

Some of the technical terms used in mountaineering are: *Aiguille*, a rock spire or needle. *Alp*, a mountain pasture. *Arete*, a ridge. *Bergschrund*, a crevasse separating the main portion of a glacier from the upper slopes of the mountain. *Col*, a pass or the low point of a ridge. *Cornice*, a projecting mass of snow as on a ridge. *Couloir*, a gully. *Glissade*, sliding down on snow or ice. *Karabiner*, a metal snap ring through which the rope

may be passed for security. *Moraine*, rock and debris carried down of pushed out by a glacier. *Scree*, gravel-like collection of stones and rock chips covering slopes below gully, steep rock faces, etc. *Verglas*, thin veneer of ice on rock.

**Mountain Gun.** Artillery unit formed for military operations in hilly country, or where wheeled carriages cannot travel. The guns and their mountings are carried on pack mules or by men. Generally the equipment makes about five or six mule loads, as a mountain battery has neither limbers nor wagons. The gun is jointed, so that the breech ring can be carried separately. The 3-75 in. gun howitzer can be unpacked from muleback and assembled in 3½ minutes. It weighs about 1,450 lb. and divides into 6 loads. The gun fires a shell of 20 lb. and has a range of between 3 and 4 m.

**Mountain Laurel** (*Umbellularia californica*). Californian Sassafras, or spice bush. A tall evergreen tree of the family Lauraceae, and a native of

California, its alternate, lance-shaped leaves emit a strong odour like camphor. The greenish-yellow flowers are clustered in umbels. The name mountain laurel is sometimes applied to *Kalmia latifolia*. See American Laurel.

**Mountain Meadows Massacre.** Outrage committed by the Mormons, on Sept. 11, 1857. A party of 130 immigrants from Arkansas, with 40 wagons and over 200 horses and cattle, were passing through Utah territory to California, when they were attacked by Indians and Mormons in Indian disguise. In response to an urgent message for help, John Doyle Lee, a prominent Mormon bishop, with a number of followers, hastened to the spot. The immigrants, who had barricaded themselves behind their wagons, welcomed Lee as their saviour; but no sooner had the Mormons gained their confidence than at a signal from Lee a general massacre took place, only 17 infants, too young to inform, being spared. Although the Mormon church denied responsibility, evidence given at Lee's trial implicated the highest officials. Twenty years after the crime Lee was



Mountain Laurel in full foliage



Mountaineering. Achieving two difficult ascents in the Swiss Alps. Left, a well-equipped climber negotiates a sharp crag; right, using an ice axe to secure a better foothold on a glacier in the Alpes des Grisons

brought to justice, and was executed at the scene of the massacre, March 23, 1877.

**Mountain Railway.** Term in civil engineering applied to lines on which the grip of the locomotive's wheels on the rails is not



Mountain Railway. A rack railway up Mount Pilatus, Switzerland, with an average gradient of 1 in 3. The engine and carriage form a single car seating 32 people

sufficient to permit it to draw or push a train, so necessitating other means of obtaining the required adhesion. These are generally some form of rack, or central rail gripped by horizontal toothed wheels on the locomotive. Also included are the ladder rack, formed of bars; the locker rack, in which the teeth are on two sides of a central rail and the toothed wheels engaging them are horizontal; and the Abt rack, with two or three flat racks side by side, their teeth being arranged stepwise, so as not to come in line with each other. The modern form of motive power is electricity. There are mountain railways working on the tooth and rack principle at Mount Washington, U.S.A.; St. Illo, Italy; in the Harz mountains; and in the Bernese Oberland.

**Mountain Sickness.** Symptoms appearing in persons ascending into high altitudes. The symptoms appear at varying heights, in varying individuals, but generally at about 20,000 ft. They are caused by deficiency in the oxygen content of the air and so in the arterial blood, while the carbon-dioxide content remains the same. Breathlessness, lassitude, and nausea characterize the condition. In those remaining at a height for

some weeks the blood-forming organs show the strain of supplying extra red cells to carry what oxygen is available. Mental symptoms are frequent when rapid ascents are made, as in modern flying. Mental apathy may come on suddenly, judgement is badly disturbed, and in fighting, cowardice or dare-devilry may equally obtain. Ability to hear almost disappears. On touching-down memory is blurred and temper is irritable. Since symptoms are due entirely to shortage of oxygen they can be entirely avoided by the use of an adequate oxygen apparatus.

**Mountains of the Moon.** Alternative name of the Ruwenzori (q.v.) mountain range, in the region of the border between Uganda and the Belgian Congo. Herodotus mentioned them in 457 B.C. as containing the source of the Nile, and the name Mountains of the Moon was used for them by Ptolemy, A.D. 150. Ancient maps depicted them as a range running across the entire African continent from Abyssinia to the Gulf of Guinea. The origin of the Nile legend doubtless lay in the existence in the range of the source of the Ruamuli, a stream which runs into the Nile.

**Mount Allison.** University of New Brunswick, Canada. Founded in 1843 by C. F. Allison, it was at first a Wesleyan academy. In 1853 it obtained the right to confer degrees, and in 1913 took its present name. It is controlled by the

United Church of Canada, but is unsectarian. The buildings are at Sackville, N.B. There are engineering workshops for the school of applied sciences.

**Mount Auburn.** Cemetery in Cambridge, Massachusetts, U.S.A. It is 6 m. W. of Boston, on the Boston and Maine rly. Here are the graves of Longfellow, Lowell, Motley, Charles Sumner, Phillips Brooks, Oliver Wendell Holmes, and other famous Americans.

**Mount Barker.** Town in S. Australia. It is a rly. junction, 22 m. E. of Adelaide, on a plateau of Mount Lofty Ranges, in an agricultural and vine-growing district.

**Mountbatten.** Name taken by the English members of the family of Battenberg (q.v.). In 1917 Louis Prince of Battenberg (1854-1921) renounced his title and was created marquess of Milford Haven; at the same time he, and also the children of his younger brother Henry (1858-96), took the name Mountbatten. The children of the 1st marquess of Milford Haven were Alice (b. 1885), who married Prince Andrew of Greece, and whose youngest child Philip (b. 1921) was created duke of Edinburgh on his marriage to Elizabeth, heir presumptive to the British crown, in Nov., 1947; Lady Louise Mountbatten (b. 1889), who married the crown prince of Sweden, 1923; George, the 2nd marquess (1892-1938); and Louis (b. 1900), created earl of Mountbatten (v.i.) 1947. See Philip, Prince.

## EARL MOUNTBATTEN OF BURMA

*A sailor by profession and inclination, and an administrator of marked ability in war and in peace, Lord Louis Mountbatten, great-grandson of Queen Victoria, proved himself one of the outstanding personalities of the Second Great War*

Louis Francis Albert Victor Nicholas was born on June 25, 1900, at Frogmore House, Windsor, youngest of the four children of Louis of Battenberg and Victoria, granddaughter of Queen Victoria. He was himself known as Prince Louis Francis of Battenberg until 1917, when his father renounced his German princely title, took the name of Mountbatten, and was created marquess of Milford Haven.

Lord Louis Mountbatten, as Prince Louis Francis then became, inherited his father's love of the sea and ships, and in 1914 entered the R.N. as a cadet, passing through Osborne and Dartmouth and becoming a midshipman in 1916. He saw active service during the First Great War in the

battleships Lion and Queen Elizabeth, and in a submarine, and at the time of the armistice in 1918 was sub-lieutenant in command of a P-boat. After a course at Cambridge, Mountbatten accompanied his cousin the prince of Wales (later Edward VIII) during the latter's tours of Australia and New Zealand in 1920, of India and the Far East in 1921.

Mountbatten, a born leader, rose steadily in rank in the inter-war years. In 1932, as a commander, he was fleet wireless officer, Mediterranean fleet, and was known in the service as the author of technical and linguistic manuals. His first command was of H.M.S. Daring, a destroyer, in 1934; he was at the Admiralty in 1936, and was promoted captain 1937.

At the outbreak of the Second Great War, he had just taken command of the new flotilla-leader Kelly and of the 5th destroyer flotilla. In May, 1940, he brought home the Kelly (already the survivor of a mine in Dec., 1939) after she had been torpedoed in operations off the German coast; she had been four days in tow. While the Kelly was under repair, Mountbatten transferred to the Javelin; she was also torpedoed (in the English Channel, Nov., 1940), but was brought safely to port. The Kelly met her end in a dive-bombing attack off Crete in May, 1941, Mountbatten being among the survivors picked up. He was awarded the D.S.O. for gallantry in these actions.

His next command, the carrier *Illustrious*, was short-lived, as on Oct. 19, 1941, he was appointed adviser on combined operations (in succession to Sir R. Keyes), becoming chief of combined operations, March 18, 1942, with the acting rank of vice-admiral and the honorary rank of lieutenant-general and air marshal. Lord Louis directed a number of commando raids on the coasts of German-occupied Europe—notably that on Dieppe, Aug. 19, 1942—and following consultation with U.S. service chiefs in Washington (June, 1942) perfected the British plans for the Allied landings in N. Africa in November.

Mountbatten's appointment as supreme allied commander in the newly created S.E. Asia theatre of war was announced, Aug. 23, 1943, at Quebec after an inter-Allied conference there between Churchill, Roosevelt, and Soong (representing China). He was given the acting rank of admiral. The success of the "Supremo," as he was called by those under his command, in both the strategic and political spheres was complete. His h.q. was truly Allied; his fighting troops included Indian, Gurkha, and Chinese, British and U.S. formations. Constantly on the move, Mountbatten would be one day at a commanders' conference and the next flying to speak to his front-line troops. As the tide of battle turned in S.E. Asia, it was his responsibility to institute military govt. pending the reintroduction of civil administration.

During July, 1945, Mountbatten spent the 12th–14th with MacArthur in Manila, and on the 25th arrived in London after attending a conference of combined chiefs of staff at Potsdam. He was all ready for a combined operations descent on Malaya simultaneous

with the anticipated Allied invasion of Japan when the Japanese surrendered on Aug. 14. On Sept. 12 he received at Singapore the official surrender of all Japanese forces in S.E. Asia.



*Mountbatten*

Created viscount 1946, Lord Louis took the title Mountbatten of Burma. He remained in S.E. Asia until the command was dissolved (1946), when he was made K.G., promoted rear-admiral, and appointed to a Mediterranean command. In March, 1947, his selection as last viceroy of India was announced. As such he carried through the negotiations for the transfer of power from British to Indian hands. At the request of the govt. of the dominion of India, he was appointed its first gov.-gen. On the same day, Aug. 15, he received an earldom. He relinquished the office in mid-1948, after a term in which he had earned the respect and affection of India, and returned to the navy as flag-officer commanding 1st cruiser squadron. He was made fourth sea lord, 1950. He married in 1922 Cynthia Ashley, daughter of the 1st Lord Mount Temple.

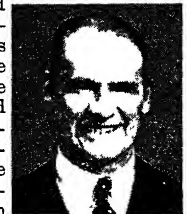
**Mount Bischoff.** Tin mine in Tasmania 90 m. W. of Launceston. Discovered in 1871, it was at one time the richest in the world, with from 70 p.c. to 80 p.c. pure ore, but is now producing only small quantities of tin. The township Waratah, 1 m. from the mine, has a pop. of about 1,000.

**Mount Carmel.** Bor. of Pennsylvania, U.S.A., in Northumberland co. It is 43 m. N. by E. of Harrisburg. Adjacent are 12 coal mines, some running 4 m. underground. Organized as a town in 1848, Mount Carmel was incorporated in 1862. Pop. 17,967. For the hill in Palestine see Carmel.

**Mount Desert.** Island of Maine, U.S.A., forming part of Hancock co. Lying to the W. of Frenchman's Bay, its surface is hilly, the highest elevation being about 1,500 ft. Its beautiful lakes and rugged coast make it a favourite summer resort. Among the places chiefly frequented are Bar Harbour on the N.E. coast, Southwest Harbour and Northeast Harbour at the mouth of Somes Sound, and Seal Harbour. Presidents Theodore Roosevelt and Taft had summer residences at Bar Harbour. The island is joined to the mainland by a bridge, and there is also ferry communication.

**Mounted Infantry.** Foot soldiers mounted on horses. They differed from cavalry in carrying a rifle as weapon, in the slower speed of their mounts, and in the fact that they only rode to action, generally fighting dismounted as infantry. The dragoons, as at first established in the 17th century, were mounted infantry. Napoleon unsuccessfully endeavoured to organize a similar body, and in both Russia and Prussia something of the kind was attempted. Some units usually referred to as cavalry were in reality mounted infantry, as those used in the American Civil War, 1862–64, and the Boers in the S. African War, 1899–1902, gave proof of the value of mobile infantry. The British had battalions of mounted infantry in the same war.

Before the First Great War the British had a scheme for the raising and training of definite units of mounted infantry, and a mounted infantry school was established at Longmoor. Trench warfare furnished little opportunity for their use in France. In Palestine and elsewhere, under different conditions, the Australian mounted divisions and others answered the description. The mechanisation of armed forces between the two Great Wars rendered cavalry and mounted infantry obsolete, as was proved by the inability of the Polish mounted divisions to impede the German advance during the Polish campaign of Sept., 1940. **Lord Mountevans,** British sailor  
*See Cavalry.*



**Mountevans, Edward Radcliffe Garth Russell Evans, 1st Baron (b.1881).** British sailor and explorer, known as Evans of the Broke. The son of a barrister,



he was born Oct. 28, 1881. From Merchant Taylors' School he went to the training ship Worcester, and entered the Royal Navy in 1897. He served in S.Y. Morning, which went to the rescue of the Discovery at the South Pole, 1902-04, and was second in command of the British Antarctic expedition of 1909-13, taking command after the death of Scott. In 1912 he was promoted commander. During the First Great War he was twice mentioned in dispatches, and received the D.S.O. and special promotion to captain when his ship, H.M.S. Broke, took part with the Swift in a successful action against six German destroyers in 1917; in the course of the engagement Evans gave the historic order: "Stand by to repel boarders." In 1921 he was awarded Lloyd's medal for saving life at sea, specially struck in gold instead of the usual silver or bronze, for his gallantry (on the cruiser Carlisle) in bringing off survivors from the steamer Hong Moh in the China Sea. Evans commanded the battle-cruiser Repulse, 1926-27, and was rear-admiral

was on the outbreak of the Second Great War appointed London Regional Commissioner for Civil Defence, a post he held throughout the war. The recipient of many British and foreign decorations, he was created Baron Mountevans of Chelsea in 1945. He published *Keeping the Seas*, 1920; *South with Scott*, 1921; numerous boys' books; and his reminiscences, *Adventurous Life*, 1946. He contributes the articles Antarctic Exploration and Arctic Exploration to this Encyclopedia.

**Mount Gambier.** Town in S. Australia. It is situated near the Victorian border, 305 m. by rly. S.E. of Adelaide. Its volcanic soil makes it a rich grain producer. Pop. 10,000. Mt. Gambier is an extinct volcano of which much of the original crater cone has collapsed, leaving its S. portion as the present summit. Valley, Blue, Crater, and Leg of Mutton lakes have formed

he succeeded the earl of Essex as lord-deputy in Ireland, in 1599. He suppressed the insurrection of O'Neill, earl of Tyrone, notably by his victory at Kinsale, Dec. 24, 1601, and after Elizabeth's death received the submission of Tyrone to James I. In April, 1603, he put down risings in Cork and the S.E. counties, leaving Ireland in the same year. He received the earldom of Devonshire and other rewards, and undertook diplomatic negotiations with Spain, 1604. The circumstances of his marriage, in 1605, with Lady Penelope Rich, who had long been his mistress, caused considerable scandal. Mountjoy died in London, April 3, 1606.

**Mount Lofty.** Range in South Australia, at the foot of which lies Adelaide. The highest point has an alt. of 2,334 ft.

**Mount Lyell.** Mine in Tasmania. It is situated at Queenstown near the middle of the W. coast, and was first discovered in 1883. Worked first for gold, it has since developed into one of the richest of copper mines, yielding a large portion of the mineral output of Tasmania. It is worked by electric power derived from Lake Margaret since 1914 added to by supply from the state hydro-electric system. Queenstown has a population of 4,000. *See* Copper.

**Mountmellick.** Market town of Laoighis co., Eire. It stands on a small stream called the Owenass, with a station on the Eire state rly., 6 m. from Portlaoighise (Maryborough), and 50 S.W. of Dublin. It is also served by the Grand Canal. It has a trade in agricultural produce and tanning, malting, woollen, and salt manufactures are carried on. The Society of Friends established a school here in 1796. Market days, Mon. and Sat. Pop. 2,300.

**Mount Morgan.** Town in Queensland. It is 23 m. by rly. S.W. of Rockhampton, and is practically maintained by the mine of this name, which has produced £25,000,000 from its gold and copper. Pop. 7,214. *See* Australia.

**Mount Palomar Observatory.** Astronomical observatory in California, U.S.A. It is situated at an altitude of 5,600 ft., and is 90 m. S.E. of the Mount Wilson (q.v.) observatory, with which it works in close conjunction. It houses a 200-inch reflector, which, when installed in 1947, completed the largest telescope in the world; its construction and erection

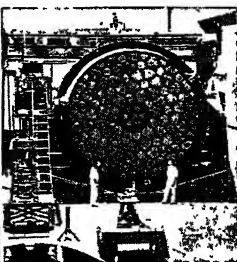


Mount Palomar Observatory, California. The interior of the dome showing the frame which holds the world's largest telescope; its 200-inch reflector is seen at top right

commanding the Royal Australian Navy, 1929-31. During 1933-35 he was c.-in-c., Africa station. In 1933, as acting high commissioner of Bechuanaland, he deposed the chief Tschekedi for the alleged flogging of a European; the case attracted much attention, and Tschekedi was eventually reinstated, but no blame was attached to Evans. In 1935 he was made c.-in-c., the Nore, and became a K.C.B. Having retired in 1939, he

chapter house, and some separate houses or cells.

**Mountjoy, CHARLES BLOUNT, 8TH BARON (1563-1606).** English administrator. He was educated at Oxford university, entering the Inner Temple, and about 1583 began to attract the favour of Queen Elizabeth. He sat as member for Beeralston, Devonshire, from 1586, and took part in the campaigns in the Netherlands and Brittany, 1586-93. Made K.G. in 1597,



in the hollows; Blue Lake, about 250 ft. deep, is at the foot of cliffs 250 ft. high. *See* Crater Lake.

**Mount Grace.** Ecclesiastical ruin about 3½ m. from Northallerton, Yorkshire. It is the remains of a Carthusian priory, regarded as the most perfect of its kind in England. It was founded in 1397 and dissolved under Henry VIII. The existing buildings consist of the church and

and some separate

had occupied 12 years. By its aid the moon can be brought within an apparent distance of 25 m. and nebulae 1,000,000,000 light years away have been photographed.

**Mounts Bay.** Inlet on the S. coast of Cornwall, England. It is an important pilchard fishing station, and contains St. Michael's Mount (*q.v.*). The bay is 21 m. across, with Penzance on the W. shore.

**Mountsorrel.** Market town of Leicestershire. It stands on the Soar, 4 m. from Loughborough, and 7 from Leicester. The rly. station is Sileby. In the vicinity are extensive granite quarries; other industries are boot and shoe, hosiery, and cardboard box manufacture. The chief buildings are two churches, one at North End and the other at South End, and a market house, dating from 1793. Pop. 3,500.

**Mount-Temple, WILLIAM FRANCIS COWPER-TEMPLE, 1ST BARON (1811-88).** British politician. Born Dec.



1st Baron Mount-Temple.  
British politician

13, 1811, a younger son of the 5th earl Cowper, he was educated at Eton, and entered the house of commons as a Liberal in 1835. During 1846-55, he was

in the Liberal and Coalition ministries; was vice-president of the council, 1857-59, and first commissioner of works, 1860-66. His mother married Lord Palmerston as her second husband, and he inherited Palmerston's Hampshire seat, Broadlands, taking the ad-



Mount Vernon, Virginia. House in which George Washington lived, now a national monument

ditional name of Temple. He was made a peer in 1880. Mount-Temple is chiefly remembered as the author of the Cowper-Temple Clause (*q.v.*). On his death, Oct. 16,

1888, his title became extinct. His estates passed to the Hon. Evelyn Ashley (1836-1907), whose son later took the name Mount-Temple.

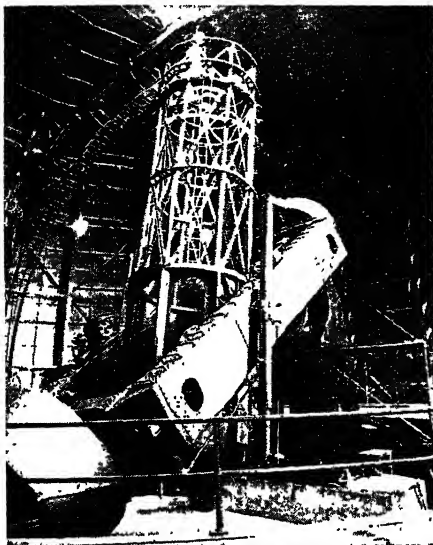
**Mount Vernon.** City of Illinois, U.S.A., the co. seat of Jefferson co. It is 75 m. by rly. E.S.E. of St. Louis, and is served by the Louisville and Nashville and other rlys. Its manufactures include lumber and machine-shop products. Settled in 1819, it was incorporated in 1837, and became a city in 1872. Pop. 14,724.

**Mount Vernon.** City of New York, U.S.A., in Westchester co. A residential and N. suburb of New York City, it stands on Bronx river, and is served by the New York, New Haven, and Hartford and other rlys. Machinery and clothing are manufactured. Dating from 1852, Mount Vernon was incorporated in 1853, and became a city in 1892. Pop. 67,362.

**Mount Vernon.** City of Ohio, U.S.A., the co. seat of Knox co. On the Kokosing river, 24 m. N.N.W. of Newark, it is served by the Baltimore and Ohio and the Pennsylvania rlys. It has engineering works, flour and sawmills, and furniture and glass factories. Natural gas and lumber are obtained locally. Organized in 1805, Mount Vernon was incorporated in 1845, and became a city in 1853. Pop. 10,122.

**Mount Vernon.** Village of Virginia, U.S.A., in Fairfax co. Standing on the Potomac river, 15 m. S. of Washington, it was the home of George Washington. The mansion in which he resided is a wooden two-storey building occupying an elevated position overlooking the river. A little distance away, on the edge of a wooded ravine, is the tomb containing the remains of Washington. In 1859, after both the government of the U.S. and the commonwealth of Virginia had

declined to purchase it, the estate, 200 acres in all, was bought by the Mount Vernon Ladies' Association of the Union, which is pledged to restore the mansion and its surroundings as far as possible to their appearance in Washington's time and to preserve them for future generations. Much of the furniture used by Washington and



Mount Wilson Observatory, California. The giant telescope, for 30 years the world's largest, which embodies a 100-inch reflector

family is in its rooms. The building and grounds are open daily to visitors, whose entrance fees meet the cost of maintenance.

**Mount Wilson Observatory.** Solar and astrophysical observatory 15 m. N.E. of Los Angeles, California, U.S.A. Founded in 1904 by G. E. Hale, it is controlled by the Carnegie Institution of Washington. It is situated on the forested top of Mt. Wilson at an altitude of 5,680 ft. Its equipment includes a 100-in. reflector, erected in 1917 and for 30 years the world's largest telescope; a 60-in. reflector; a large spectroheliograph, and much laboratory apparatus for spectroscopic work. Its work is chiefly concerned with solar physics, stellar motions and distances, and research on extragalactic nebulae and the structure of the universe. Situated above the cloud-line, it was ideally placed at its foundation, but since then the development of artificial lights in Pasadena, 8 m. to the S.W., has seriously affected some types of work. The observatory works in conjunction with Mount Palomar (*q.v.*) observatory.

**Mourne.** Mountain range of N. Ireland. In the S. of co. Down, it extends for 14 m. in a S.W. to N.E. direction. Slieve Donard, the culminating summit, attains 2,796 ft.

**Mourning.** Outward expression of sorrow, particularly for the dead. In the modern civilized world it takes the form of wearing black garments and using that colour in other ways, e.g. on writing paper. White is also a mourning colour, while purple or mauve is traditionally associated with mourning for royal personages, as well as for the so-called "half-mourning."

Mourning customs are usages and rites attending the public manifestation of sorrow for the dead. In primitive society some conventional signs of mourning denote a condition of taboo, or a desire to placate the ghost, or to avoid recognition, as with dishevelment. The most widespread demonstration of grief affects the raiment, which may be white, as in imperial Rome, Japan, and W. Africa; red, Gold Coast; blue, Turkey and Ancient Egypt; grey, Abyssinia; yellow, China; or black, Europe. The coat may be reversed, as with the Ainu. The material may be hemp, as in China; haircloth, the sackcloth of Gen. 37; network, as in Australia; or grass mantles, or white shell-necklets, as in Melanesia.

The body may be smeared with clay, mud, ashes, or black paint. The hair may be allowed to grow, or shorn and burned; it may be buried with the dead, or hung upon trees. Laceration as practised anciently, in Arabia and Scythia, and forbidden by Moses (Lev. 29), still endures, and special scarifiers may be used, as in Polynesia. Finger-amputation survives from Palaeolithic Europe. Wailing tends to develop a class of professional mourners, as with the Pueblo Indians, Semites, and Irish keeners.

In the English-speaking world, and to some extent elsewhere, the tendency of the 20th century has been to reduce the signs and time of mourning very considerably. The heavy crepe worn by widows in the Victorian era has almost disappeared, while the long periods, extending to two years, during which black garments were worn, have been greatly reduced. The mourning ring has gone, too, and

black-edged notepaper is much less common. Many bereaved families adopt no further sign of mourning than crepe sleeve bands or mere patches, and these are worn less as an ostentation of grief than as a tactful warning to strangers to avoid embarrassing topics of conversation. Generally, children do not wear mourning. In all this is seen the influence of the two Great Wars which not only made bereavement a common experience but demanded a less wasteful fashion. On the death of a royal personage a period of mourning for those attending court is prescribed, and instructions are issued about the clothes to be worn. These periods, too, have become noticeably shorter. See Africa; Burial Customs; Funeral Rites.

**Mousa** (Norse, moory isle). Uninhabited islet, about 1½ m. long, off the S.E. coast of Mainland, Shetland. Upon a rocky promontory facing the sound, 13 m. S. of Lerwick, stands a broch, the most perfectly preserved of the so-called Pictish towers of Scotland, and now scheduled under the Ancient Monuments Protection Acts. The unroofed court, 30 ft. across, with well and hearthstone, is surrounded by two walls 15 ft. thick overall, containing three beehive-roofed chambers, above which six galleries lit by slits in the inner wall penetrate to the parapet, 45 ft. high. The outward bulge of the upper courses, giving to the tower the aspect of a dice-box, rendered this prehistoric stronghold unscalable. It was unsuccessfully besieged by Harold, earl of Orkney, in 1154. See Broch.

**Mouscron** (Flemish, Moescroen). Town of Belgium, in the prov. of W. Flanders. It lies close to the French frontier, 7 m. S.S.W. of Courtrai and 5 m. N.E. of Tournai, on the Ghent-Tournai rly. It has spinning mills, soap works, tobacco factories, and miscellaneous industries. Pop. 35,225.

**Mouse.** Name popularly applied to many small rodents, but cor-

rectly only to the smaller species of the genera *Mus*, *Apodemus*, and *Micromys*. Three species occur on the mainland of Great Britain, the house mouse, the harvest mouse, and the long-tailed field mouse. The first (*Mus musculus*) is found almost wherever man exists. It is brown in colour, with large ears and long tail and is altogether 4-5 ins. in length.

The harvest mouse (*Micromys minutus soricinus*), described by Gilbert White, is in the U.K. confined to England and the S. and E. of Scotland. One of the smallest of British mammals and the only one with a prehensile tail, it is bright orange brown on the upper parts and white below. It constructs a globular nest among the stems of standing corn.

The long-tailed field mouse (*Apodemus sylvaticus sylvaticus*) swarms in the fields, and is one of the most prolific of mammals. In general form it closely resembles the house mouse, but has a longer tail. Other species and varieties occur in the Western Isles of Scotland. In America the word mouse is also applied to a large number of voles. See Field Mouse; Shrew; Vole.

**Mouse Deer.** Popular name for the chevrotain (*g.v.*), a small ungulate mammal placed by zoologists between deer and camels.

**Mousehold.** Heath or open space near Norwich, England. Within the city boundaries, it overlooks it on the N.E. Here in 1549 the insurgents under Robert Ket encamped. Crome has immortalised it in several of his paintings, while it figures in Borrow's writings. The heath itself is public property.

**Mousehole.** Village of Cornwall, England. It is about 3 m. S. of Penzance and faces Mounts Bay. A port in the 13th century, it is now one of the most picturesque fishing villages, much visited by artists. Spaniards raiding Mousehole in 1595 burnt the church of S. Paul. The place was once known as Porth Enys (island port). Pron. Mowzle.

**Moussorgsky, Modeste Petrovich** (1835-81). Russian



Mouse. 1. House m., *Mus musculus*. 2. Harvest m., *Micromys minutus*. 3. Field m., *Apodemus sylvaticus*

rectly only to the smaller species of the genera *Mus*, *Apodemus*, and *Micromys*. Three species occur on the mainland of Great Britain,

composer. Born at Karevo, Pskov, March 28, 1835, he entered the army, but, growing very interested in music, threw up his

composer. Born at Karevo, Pskov, March 28, 1835, he entered the army, but, growing very interested in music, threw up his

commission in 1857 to devote himself to composition. Severe poverty was relieved only when he was given a minor post in the civil service, but this he also gave up in 1868, to live in St. Petersburg until his death, March 28, 1881. Moussorgsky's dominant idea was to bring music into closer relationship with everyday life. Of the group of nationalist composers, he was most influenced by literary and political movements. His chief work, the opera Boris Godounov, 1874, was first given in a revised version (by Rimsky-Korsakov) in England in 1913. A second opera, Khovantschina, 1880, was even more nationalistic. In Moussorgsky's songs the psychology of Russian peasantry and children is finely reflected. His programme music includes Pictures from an Exhibition, for piano, and a tone-poem, A Night on the Bare Mountain. *Consult* Life, M. D. Calvocoressi, new ed. 1946.

**Moustierian.** The closing period of the lower Palaeolithic age in Europe. After the Acheulian period the climate varied—the bison, musk-ox, steppe horse, reindeer, and Arctic fox are found—and systematic cave life began. The institution of ceremonial burial identifies the race, especially at Chapelle-aux-Saints in Corrèze and Le Moustier in Dordogne, whence the name. The flints include side-scrapers, points, lance-heads; sling-stones and rude bone tools are also found. Stations existed from Crayford in the Thames valley eastward to Asia Minor and the Nile valley.

**Mouth.** External orifice in the head of human beings and other animals, together with the cavity behind it. The human mouth, which contains the tongue and the teeth, is divided into two parts: the vestibule, which is the space between the teeth and the lips and cheeks; and the mouth proper, which is the cavity behind the teeth. This is roofed with the hard palate, with teeth and gums in front of it and at its sides. At the back it opens into the throat. *See* Lip; Teeth; Tongue.

**Mouth Organ.** Small musical instrument of the reed-organ type. Fixed metal reeds are slotted into a metal plate some 4 ins. long, and enclosed within a box. Each reed has a separate channel for wind, and the channels are in parallel rows at right angles to the length of the box. It is played by being passed across the lips with an alternate blowing and suction action, the notes not required

being stopped by the tongue. It was invented in 1829, possibly by Sir C. Wheatstone, but for many years the instruments were the monopoly of a German firm who produced them in millions. The cheerful music of the mouth organ was extremely popular among troops of all countries during both Great Wars. Remarkable harmonies can be produced; indeed, exceptional performers, e.g. Larry Adler and Borrah Minnevitche, have achieved a surprising virtuosity as professional players of the harmonica, as these artists prefer it to be called.

**Mouvement Républicain Populaire** or M.R.P. (People's Republican Movement). French political party, formed in 1944 under the leadership of Georges Bidault (*q.v.*) from the R.C. democratic section of the resistance movement. It put up candidates for the first time at the first municipal elections after the liberation of France, held April, 1945, when it gained control of 447 out of 35,307 communes. In the constituent assembly elected Oct., 1945, it held 150 out of 586 seats, its closest rivals being the Communists, 159, and the Socialists, 139; in that elected June, 1946, it secured 167 seats. In the national assembly elected Nov., 1946, M.R.P. secured 172 out of 617 seats (Communists 182, Socialists 101). In the council of the republic of 1946, it had 70 out of 315 seats; in that of 1948, 18 (de Gaulle's rally of the French people having absorbed much of its former support). Members of M.R.P. served in de Gaulle's 1944 govt. and later coalition govts., including more than one premier.

**Movement.** In music, distinct part of an extended composition, e.g. symphony. *See* Sonata.

**Movement.** Biological phenomenon of widespread occurrence. It may be readily apparent as with the swimming of a fish, or less easily observable, as with a part of an organism which is free in its surroundings, such as a sperm or a chromosome. Parts of organisms may become rearranged in relation to the rest of the body though attached to them, as occurs when an animal muscle contracts or expands or a plant tendril curls. All such movements require the expenditure of energy. In the protoplasm occurs a process of respiration which is undoubtedly connected with the liberation of the required energy.

In plants movement is on the whole relatively simple. Move-

ments may be directed by conditions in the surroundings or may occur irrespective of these. The former are called taxis and may be exemplified in the phototaxis of motile algae, directed by light acting as a stimulus to them, and the chemotaxis of anthozooids, induced by the differential concentration of soluble material in the water in which they swim. Movements independent of surroundings are autonomic movements: whatever it is that institutes the movement must originate within the organism itself. Similar categories of movement by parts of plants may be recognized. Paratonic movements are induced by conditions in the environment and are either tropisms, e.g. the geotropic bending of roots into the vertical under the influence of gravity, or nastic movements, e.g. the pulvinar movements of *Mimosa pudica*, which result after shock. Both autonomic and paratonic movements may be manifestations of differential growth, as are nutations and geotropic curvatures, or may be due to reversible changes in sap pressure of cells, as in Desmodium and Mimosa. In the case of tropic movements the differential growth is the ultimate outcome of the effect of unilateral stimulation on the distribution of auxin, and a similar diffusion of substance is known to be the means of transmission of shock stimulus to the pulvini of Mimosa.

#### Movement in Animals

In animals movement is so diverse as to evade simple classification. It may be accomplished in lowly forms in an amoeboid manner, by means of cilia, e.g. Paramecium or other cell processes, e.g. Hydra, Vorticella, by the change in shape of cells or cell aggregates, as for example muscles. Striped muscles come under the direct control of the central nervous system and are concerned with the outward movements of the body, e.g. in walking, and plain muscles cause movements of the internal parts. Thus in their ultimate initiation animal movements may be autonomic or induced. In the more complicated types movements are coordinated either by nervous means or by hormones and form parts of the general behaviour of the organism. This may take the form of maintenance activity in which movement has such ends as escaping from harm, finding food or other conditions suitable to the satisfactory life of the

creature. It may be instinctive behaviour, habit, or intelligent reaction to environment.

**Mowat.** ROBERT BALMAIN (1883-1941). British historian. Born at Edinburgh, Sept. 26, 1883, he became a fellow and tutor of Corpus Christi College, Oxford, 1907, and in 1928 was appointed professor of history at Bristol university. His chief writings included *The Wars of the Roses*, 1913; *A History of Great Britain*, 1920-21; *The Concert of Europe*, 1930; *England in the 18th Century*, 1932; *The Continent of Europe in the 18th Century*, 1934. He was killed in an air crash in Sept., 1941.

**Mowbray, BARON.** An English title dating from 1283. Notable of the early members of the Norman family of Mowbray were Roger, one of the barons who rose against Henry II, and William, who was among the barons who forced Magna Carta from John. A later Roger was summoned to Parliament as a baron in 1283, and his son John was hanged for rebelling against Edward II. John, the 4th baron, married a great heiress, and their younger son, Thomas, who became the 6th baron, was made earl of Nottingham and duke of Norfolk. In 1475, with the death of John, the 4th duke, the male line of the Mowbrays became extinct. The estates were divided between the families of Howard and Berkeley, and the barony fell into abeyance. In 1877 it was revived for Alfred Joseph, 20th Baron Stourton, and his grandson William (b. 1895) became in 1936 the 25th Baron Mowbray. Bramber Castle, Sussex, was one of the seats of the Mowbrays. See Norfolk, Duke of.

**Mowing.** Operation of cutting a fodder crop, either by a mowing machine or by the scythe, the latter being also used at times for cereals. A good scytheman, swinging the implement from the body, and not employing arm work only, can mow about two acres per day. The point of the scythe is put in at the required height, and swung evenly through so as to leave a level stubble.

A mowing machine is a two-wheeled machine used for cutting grass and seed crops. The work is done by sharp "fingers" attached to a finger beam, or cutting bar, which adjusts itself to the shape of the ground. See Lawn Mower; Scythe.

**Moyale.** British frontier post on the Kenya-Abyssinian border. It owed its importance to the wells,

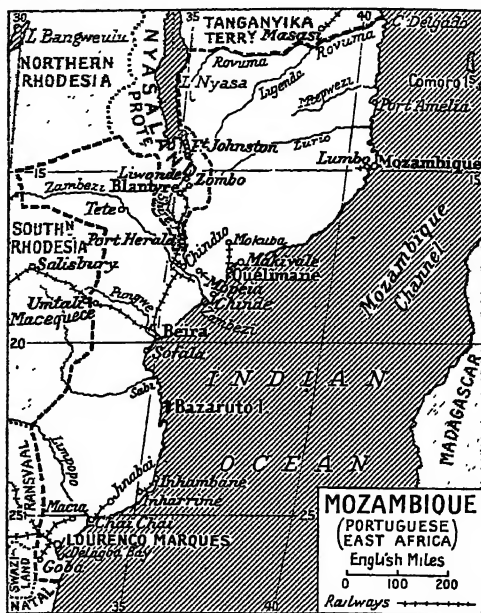
which lay outside the walls of the post, and its capture on July 15, 1940, was hailed as a great victory by the Italians. Across the frontier was another post of the same name, "Italian" Moyale. The position Mega-Moyale was a strong one; but the Italians evacuated Moyale after the capture of Mega by S. African forces, and it was entered without opposition, Feb. 22, 1941, by a patrol of Abyssinian irregulars sent forward by the S. Africans. See East Africa Campaign.

**Moyné, WALTER EDWARD GUINNESS, 1ST BARON** (1880-1944). British politician. Third son of the 1st earl of Iveagh, he was born in Dublin, March 29, 1880, and educated at Eton. He was M.P. for Bury St. Edmunds from 1907 to 1931. He served in the First Great War and was awarded the D.S.O. In 1922 he became financial secretary, and in 1925 minister, of Agriculture. While holding the latter office he introduced the system of the national mark for eggs in 1929. Raised to the peerage in 1932, he became secretary of state for the Colonies and leader of the house of lords in 1941, and was appointed resident minister in the Middle East in 1944. He was assassinated by Jewish fanatics in Cairo, Nov. 6 the same year, and was succeeded in the peerage by his son, Bryan Walter Guinness (b. Oct. 27, 1905).

**Moynihan, BERKELEY GEORGE ANDREW MOYNIHAN, 1ST BARON** (1865-1936). A British surgeon. Born in Malta, Oct. 2, 1865, he received his medical training at Leeds medical school and practised in Leeds, where he became professor of clinical surgery in the university. Specialising in the abdomen,



Lord Moynihan,  
British surgeon



Mozambique. Map of the Portuguese colony in E. Africa

he became one of the most eminent surgeons of his time, and was knighted in 1912. He served in France during the First Great War, rising to the rank of major-general. He was created a baronet in 1922 and a baron in 1929. Founder of the *Journal of Surgery*, he published a number of books on diseases of the digestive organs, including *Abdominal Operations*, 4th ed., 1925. He died Sept. 7, 1936, and was succeeded in the title by his son Patrick Berkeley Moynihan (b. 1906).

**Mozambique** (MOÇAMBIQUE), or PORTUGUESE EAST AFRICA. Portuguese colony in E. Africa. Roughly triangular in shape, it is bounded on the N. by Tanganyika Territory, W. by Nyasaland Protectorate, Rhodesia, and the Transvaal, and E. by the Mozambique channel, which separates Madagascar from the African continent. It has an area of 297,730 sq. m., and is divided into four provinces, Sul do Save, Zambezia, Niassa, and Manica and Sofala, the last acquired by the govt. from the chartered Companhia de Moçambique in July, 1942.

From the coastal swamps the land rises gradually to forested hills and the African plateau. The whole country is extremely fertile, with a flourishing export trade in sugar, maize, cotton, copra, and sisal, as well as mineral products. The principal ports are the capital, Lourenço Marques; Beira; and



Mozambique, the former capital. Other towns of importance are Quelimane, Mopeia, and Chinde, which lies on the only navigable outlet of the Zambezi river. The pop. of the colony in 1940 was 5,085,630, 27,438 Europeans.

The Delagoa Bay rly. connects Lourenço Marques with Pretoria; the Beira rly. links up with the Rhodesian rly. system; and there are other lines, bringing the total mileage inside the colony up to 477 m. The Lower Zambezi bridge, opened Jan. 14, 1935, is 12,064 ft. long, then the longest bridge in the world. The unit of currency is the Portuguese escudo.

Mozambique was visited in 1498 and 1502 by Vasco da Gama, and in 1505 by Albuquerque, who established it as a Portuguese province. In the 18th and the early part of the 19th centuries it became a stronghold of the slave trade. In 1875 and in 1885-91 disputes arose with Great Britain regarding the precise boundaries of the Portuguese territories around Delagoa Bay and Mashonaland, Matabeleland, and Manicaland, which were settled by arbitration on July 24, 1875, and by the Anglo-Portuguese convention of 1891. Certain territory S. of the Rovuma, formerly part of German E. Africa, was allotted to Portugal as the "original and rightful owner" by the Treaty of Versailles, Sept. 23, 1919.

The seaport of Mozambique (pop. 8,000) has been eclipsed in importance by Lourenço Marques. It stands on a small coral island of the same name, at the mouth of Mosuril Bay, 3 m. from the coast. It has a harbour, deep enough to admit vessels drawing 28 ft., and the fortifications built by the Portuguese in the early sixteenth century still stand. Founded in 1508, it was the capital of the colony until 1907, and is the seat of a Roman Catholic bishopric. Its full name is San Sebastian de Mozambique.

**Mozambique Channel.** Strait of Africa. It is between the coast of Portuguese East Africa and the island of Madagascar, and was at one time a noted resort of pirates and slave-raiders.

**Mozarabes.** In Spain, term applied to those Christians who, under the Moorish domination, maintained their old life and religious practices amid the Muslims, as in Toledo. The liturgy preserved by these people is known as the Mozarabic, Gothic, or Isidorian, and the introduction of the Roman rite was frequently resisted by the

Mozarabes, e.g. in Castile and Leon, 1077, and Toledo, 1085. Gradually the use was suppressed or died out, but the rite is still performed in the Mozarabic chapel in the cathedral of Toledo and at Salamanca. See Moors; Spain.

**Mozart, WOLFGANG AMADEUS** (1756-91). Austrian composer. He was born at Salzburg, Jan. 27,



After J Lange

1756. At the age of three he displayed a keen musical ear and a good memory, and under the guidance of his father quickly learned to play on the harpsichord and to compose simple minuets; at what is usually the nursery age he was taken around the countries of Europe, showing off his astonishing gifts as a player of harpsichord, organ, and violin, and as a composer—first to Paris, then to London (where he composed two symphonies and a set of sonatas for harpsichord and violin), Amsterdam, Rome, Milan, Naples, Mannheim, Vienna, Potsdam, Berlin. In 1769 the archbishop of Salzburg appointed Mozart his concertmaster, a post he filled, despite long absences while touring as a virtuoso, until 1781.

In 1777 he became friendly with the Webers of Mannheim, falling in love with the second daughter, Aloysia, a gifted singer. The affair came to nothing, and in 1782 Mozart married the younger sister, Constanze, with rather unhappy results. This same year was important as marking the beginning of a great friendship with Haydn. Although there was a difference of 24 years between their ages, each composer learned a great deal from the other.

When the boy prodigy arrived at manhood, the aristocrats who had once pampered and petted him, and showered gold pieces and snuff boxes upon him, took no further interest. Until his death, when real success was almost within his grasp, Mozart eked out a livelihood as composer, virtuoso, and teacher. Despite incessant work, lack of money, and later ill-health, Mozart's kindly nature and lively spirits were never damped, at least not in the presence of other people. Of all great composers Mozart is probably the most enigmatic, for only in some of his last compositions does his music give the slightest hint of an emotional state that might suggest mental distress. He died Dec. 5, 1791, from typhus fever, and was buried in a pauper's grave.

Mozart was a natural composer, with a seemingly unending flow of ideas and an extraordinary technical facility. A large proportion of his work was completed in his head before being put on paper. In this way he is said to have conceived the overture, *The Marriage of Figaro*.

He was an accomplished composer at the age of eight. But his early compositions were little more than stylistic copies of the works of contemporaries. Having absorbed all that his masters could teach him, he gradually developed a style of his own, as individual as that of Handel, Beethoven, or Wagner. In his short life of less than 35 years his output was prodigious. For a quarter of a century he poured out an unending stream of good works, many being masterpieces, nearly all written to order. He excelled particularly in the symphony, piano concerto, and string quartet, and in opera. Into each of these branches of composition Mozart put the whole of himself. And a study of any one branch is sufficient to give one a complete knowledge of Mozart's development from the highly polished elegancies of his youth to the profound and expressive works of his maturity, such as his last three symphonies, no. 39 in E flat, no. 40 in G minor, and no. 41 (Jupiter) in C, or the string quintet in G minor, or the piano concerto no. 24 in C minor. Throughout his life he persisted in thinking primarily in terms of the elegant aristocracy for whose delectation he expressly wrote. But although he more or less accepted the conventions of his day, particularly as regards musical form,

within those conventions he uttered the most profound, personal, and intimate things.

To whatever heights Mozart may have risen in instrumental music, he soared even higher in his operas. Despite the infinitely greater musical and dramatic resources at the disposal of later composers such as Wagner and Verdi, at least three of Mozart's operas, *The Marriage of Figaro* (1786), *The Magic Flute* (1791), and *Don Giovanni* (1787), remain as unsurpassed masterpieces for powerful characterisation and richness of melodic invention.

An exhaustive catalogue of Mozart's works was publ'd. 1862 by Ludwig von Köchel (1800-77), and his numbering is now customarily used to distinguish particular compositions, e.g. Linz symphony in C maj., K. 425.

#### Ralph Hill

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**Mpongwe** or **Pongo**. Name applied by the Portuguese to the Abuka, a negroid tribe in the Gabun colony, French Equatorial Africa. Their Bantu dialect extends from the N. Gabun peninsula along the coast to the Ogowe. They are industrious cultivators, traders, and boatmen, using craft 60 ft. long, hollowed out by fire. See Bantu; Negro.

**Mpororo**. Upland region on the S.W. border of Uganda. Extending from the Kagera river-boundary between Tanganyika Territory and Ankole to Mt. Mfumbiro in Belgian Congo, it comprises scantily timbered grass-steppes 4,600 ft. above sea-level, with mountainous ridges up to 7,600 ft., and marshy valleys. It possesses a healthy, temperate climate, with big game in abundance, and fertile soil, and is ruled by the Batusi, who have subjugated the primitive negroid population.

**Mr. Midshipman Easy**. Novel by Capt. F. Marryat. It was first published in 1836, and tells the story of a midshipman whose father believes in natural equality, and who gets into many scrapes by his liberal interpretation of his father's teaching. It long enjoyed popularity as an adventure story of the sea, characterised by robust humour.

**Msta.** River of the R.S.F.S.R., in Leningrad region. Rising in Lake Mstino it flows generally W. and after a winding course of about 150 m. discharges itself into Lake Ilmen, S.E. of Novgorod. It is connected with the Volga by a system of canals.

**Muang T'ai**. Official native name of Siam. On June 24, 1939, the words Siam and Siamese were changed to Muang T'ai (Thailand) and T'ai respectively by the council of ministers. The inhabitants have long called themselves T'ai, or the free people. See Siam.

**Much Ado About Nothing**. Romantic comedy by Shakespeare. While the friends of Beatrice and Benedick plot successfully to bring about their marriage, Don John, bastard brother of the prince of Arragon, plots to make Claudio, the prince's favourite, think that Hero, his betrothed, is unfaithful, but is thwarted by the unwitting agency of the simple-minded constables Dogberry and Verges.

The play, in which tragedy, comedy, and farce are blended, was first printed in quarto in 1600. The scene is laid in Messina. Much of the plot is Shakespeare's, but he derived materials from Bandello's *Timbreo di Cardona*, 1554; the story of Aridante and Geneva in Ariosto's *Orlando Furioso*; and that of Phaon and Claribel in Spenser's *Faerie Queene*. To the modern mind the main interest in the play is in the characters of Benedick, a lord of Padua, pledged to bachelorhood, and Beatrice, a lady as apt at scornful speech as disdainful of men, but full of nobility of soul, displayed in her defence of her cousin Hero. Beatrice and Benedick afford perhaps the earliest examples of character development in Shakespeare's plays, the first being a favourite impersonation with Mrs. Abington, Mrs. Siddons, and Ellen Terry; the second a favourite with Charles Kemble, Macready, Charles Kean, and Henry Irving. Notable modern revivals have been at The Lyceum, 1882, with Irving and Ellen Terry; Strand, 1924, with Nicholas Hannen and Athene Seyler; Lyric, Hammersmith, 1927, with Lewis Casson and Sybil Thorndike; and the Winter Garden, 1945, with Donald Wolfit and Rosalind Idon.

**Much Hadham**. Parish in Herts, England. It is noted under Hadham.

**Much Wenlock**. Name for the parish in Shropshire which forms part of the bor. of Wenlock (q.v.).

**Mucic Acid**. White crystalline powder. It was first prepared by Scheele in 1780 by the action of nitric acid on milk sugar. Fourcroy and Vauquelin afterwards discovered that it could be made from various gums and mucilages, and they gave it its present name. Mucic acid is isomeric with saccharic acid.

**Mucilage** (Lat. *mucus*, slime). Viscid sticky liquid secreted by many plants. Their distribution and quality vary, but the seeds of mustard, quince, and flax yield considerable quantities when macerated. The tubers of some species of Liliaceae and Orchidaceae and the hairs of many contain mucilage. The chemical constitution is not thoroughly understood, but generally they contain complex compounds related to cellulose and the sugars (carbohydrates).

The term is also applied, particularly in the U.S.A., to artificial preparations used for adhesives and as suspending agents in medicine, e.g. solutions of gum arabic and of gum tragacanth. In Britain the term is usually reserved for cloudy preparations, e.g. gum tragacanth, as distinct from clear solutions, e.g. gum arabic.

**Mucin**. Substance consisting of protein combined with a carbohydrate derivative. It occurs in epithelial cells and forms the chief constituent of the cementing substance between cells. It is found also in the saliva, gastric juice, bile, etc. See Mucus.

**Muck**. Island of the Inner Hebrides, Argyll, Scotland. Situated off the coast of Inverness, it is 5 m. S.S.W. of Eigg and is about 2 m. in length.

**Muckers** (Ger. *Mucker*, hypocrite). Fanatical sect of German mystics. It was founded about 1835 at Königsberg by two Lutheran pastors named Diestel and Ebel. The members, who were mostly connected with the German aristocracy, Frederick William IV being said to hold their views, professed to lead a life of "higher purity," with the result that grave charges of immorality were brought against them, and their leaders were degraded from the ministry and imprisoned, 1839-42.

**Muckrakers**. American political nickname. It was suggested by Bunyan's character, "the man with the muckrake," and was applied by Theodore Roosevelt in 1906 to a group of writers who at that time were exposing municipal and business corruption in the U.S.A. The most notable

examples were Ida M. Tarbell (History of the Standard Oil Company), Lincoln Steffens (The Shame of the Cities), Thomas W. Lamont (Frenzied Finance), and Upton Sinclair (The Jungle). The use of this term was resented by those who maintained that the writers were animated by zeal for reform. The exposures in fact resulted in many improvements in political and business practices.

**Mucous Membrane.** Membrane composed of epithelium on a basement layer. It contains mucous glands, and lines the cavities and canals of the body which communicate with the external surface, such as the alimentary canal and bladder, the nose, and the mouth.

**Mucus.** Word of Greek origin, meaning the secretions of the mucous membranes. It is applied especially to the secretions of the nose in human beings, but also to the secretions of snails, slugs, and other molluscs.

**Mud.** In geology. name given to exceedingly finely divided rock debris. Particles are of the order of 0.005 mm. diam. or less, and require still water in which to settle. They can therefore drift far out to sea before being deposited, though flocculation of particles carried into salt water may result in their settling near shore and in estuaries. The majority of the particles belong to the clay mineral group. With loss of water on compaction mud grades to clay, and thence to shale or mudstone, and may even be altered to form slate. Deep-sea muds are found beyond the continental shelf between depths of 500 and 1,500 fathoms. They are coloured red, green, or blue.

**Mudar** (*Calotropis gigantea*). Evergreen shrub of the family Asclepiadaceae, native of India. The large, opposite leaves are broad, wedge-shaped, and woolly on the under side. The rose and purple flowers are clustered. A smaller species (*C. procera*), native of India, has white flowers, with a purple spot on each petal. Both plants yield an acrid, milky juice, used, as is the bark of the roots, as a remedy for skin diseases; and the inner bark of the younger branches provides a fibre which resembles that of hemp.



Mudar. Leaves and flowers of this evergreen shrub

**Mud-fish or LUNG FISH.** Popular name applied to several species of fish constituting the sub-class



Mud-fish. Pictorial diagram showing the African species in its hole

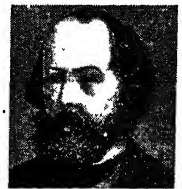
Dipnoi. The first order, Monopneumona, have one lung and consist of the single Queensland species, *Ceratodus forsteri*, described in the article *Ceratodus*. The Dipneumona, with a double lung, consist of the genus *Protopterus*, native of mid-Africa, and the S. American *Lepidosiren paradoxa* of the Amazon and its affluents. *Protopterus annectans* is an eel-like fish, about 6 ft. long, with slender and feeble paired fins, useless for locomotion, which devolves chiefly upon the tail. It subsists upon frogs, crustaceans, worms, and insects in the shallow water of river marshes; has a lung in addition to gills; and rises repeatedly to the surface to replenish it with fresh air.

It aestivates through the hot season when the pools dry up, by boring into the mud to a depth of 1½ ft., then coiling on itself, and secreting from the skin a coating of mucus which hardens into a cocoon. A tubular opening connected with its mouth enables it to breathe, and in this way it waits for the rainy season to release it, living in the meantime on the fat stored around its kidneys. See Bowfin; Fish.

**Mud Flow.** Rapid descent of wet mud and rock down a mountainside. Such flows occur in regions where rainfall is intermittent but heavy, and where loose

fine-grained soil, clay, or decomposed rock debris is available in large quantities. Mud flows derived from glacial boulder clay have occurred in the Alps, and from deeply weathered rock material in semi-arid regions. Flows tend to follow streams. Besides mud they carry boulders which become grooved and striated during movement. Volcanic mud flows, termed *lahars* (Javanese), result from mixture of water with unconsolidated ash from the volcano. The water may be derived from crater lakes or from condensation of steam or torrential rain accompanying an eruption. Herculaneum was buried by a rain lahar in A.D. 79. See Volcano.

**Mudie,** CHARLES EDWARD (1818-90). Founder of Mudie's Library. The son of a newsagent, he was born in Chelsea, Oct. 18, 1818. In 1840 he started in business for himself as a bookseller in Southampton Row, Bloomsbury, and did also a little publishing, but a development came when he began to lend books on business lines. The idea caught on, and in 1852 he moved "Mudie's Select Library" into New Oxford Street. He died Oct. 28, 1890. The business, soon known in every part of the land, became a limited company in 1864. It moved its headquarters to Kingsway in 1931 and closed down in 1937. Mudie, who was a Congregationalist, is known as the author of hymns.



C. E. Mudie, Library founder

**Mudros.** Town and bay on the S. coast of the Greek island of Lemnos, in the Aegean Sea. During the First Great War its port became the chief naval base for the Dardanelles operations, and in addition was used as a military base for the campaign in Gallipoli. The armistice between the Allies and Turkey was signed here, Oct. 30, 1918. See Aegean Sea; Gallipoli, Campaign in; Lemnos.

**Mud Volcano.** Small volcano, the cone of which consists chiefly of solidified mud. These volcanoes discharge mud and gases, chiefly hydrocarbons, and may reach a height of 300 ft. They may occur in non-volcanic areas, e.g. near Baku, on the Caspian Sea.

**Muezzin** (Arab. *mu'adhdhin*, one who calls to prayer). Official in a mosque who proclaims the



Muezzin calling the faithful to prayer, from the painting by V. L. Gérôme  
By courtesy of Goupil & Co.

times of prayer. In the Mahomedan day there are five times for prayer: dawn, noon, 4 p.m., sunset, and midnight. The call, which is sounded from the minaret, consists of the following sentences: Allah is great (thrice); There is no God but Allah (twice); Mahomet is the Prophet of God (twice); Come to prayer (twice); There is no God but Allah (twice). Appointed by the imam (*q.v.*) of the mosque, the muezzin is an official of some importance, and in virtue of his office is entitled to a place in Paradise. See Mahomedanism; Mosque.

**Muff** (Old Fr. *moufle*, thick glove). Article of dress, open at either end, and made of fur, velvet, silk, etc., padded with cotton wool, and carried to keep the hands warm. In the 17th and 18th centuries muffs were used by men as well as women. Snuffkin or snoskyn is an old word for a muff.

**Muffle**. In metallurgy, a container used for smelting a sample of metal or ore, or for heating a metal article out of contact either with the heating fuel or with the products of combustion. Usually roughly box-like in form, and made of fireclay or other refractory material, closed except for a small opening at one end, it is placed in a furnace so that hot gases pass round it and heat it to the necessary degree. Muffles are also used in assaying and in tempering or hardening of metals.

**Mufimbiro** OR MFIMBIRO. Range of active volcanic mountains of Africa. They are N. of Lake Kivu, partly in Congolese territory and partly in Uganda, and attain an alt. of nearly 15,000

ft. They were first seen by Captain Speke in 1861. The range consists of eight prominent peaks, of which Karisembi, 14,780 ft. in alt., is the highest. Other principal peaks are Muhavura, Miken, Visoke, Sabinio, Namlagira, and Nina Gongu.

**Muffi**. Mahomedan consulting canon lawyer. Upon application he gives legal opinions on points of Islamic law. The use of the word for plain or civilian clothes instead of uniform was originally Anglo-Indian. The loose, flowing robes of a muffi compared with a tight-fitting uniform may have suggested it. See Grand Mufti.

**Muggletonians**. English religious sect. It was named after Lodowicke Muggleton (1609-98), who declared that he stood in the same relation to his cousin, the Puritan, William Reeve, that Aaron stood to Moses, and the two, professing the gift of prophecy and declaring that they were the two witnesses foretold in Rev. 11, attracted a large following. They taught that God has a human body; denied the existence of the Trinity; held that the Devil was incarnate in Eve, and that God the Father suffered on the Cross, leaving Elijah to govern Heaven while He came to earth to die. Consult Reeve and Muggleton's Transcendent Spiritual Treatise, 1652; Acts of the Witnesses, with Letters and Autobiography, L. Muggleton, 1699; Complete Collection of the Works of Reeve and Muggleton, 1756, reprinted 1832.

**Mugwort** (*Artemisia vulgaris*). Perennial herb of the family Compositae, native of Europe, Asia, and N. Africa. It has erect, reddish, grooved, and branching stems. The alternate broad leaves are deeply cut into long-pointed segments, and the lower surface is white and silky. The small reddish-yellow flower-buds form slender sprays. See Wormwood.



Mugwort. Spray of foliage and flowers. Inset, left, single flower; right, segmented leaf

**Mugwump**. American political nickname. At the 1884 presidential election many influential Republicans objected so strongly to the party's choice of J. G. Blaine as its candidate that they either abstained from voting or supported Grover Cleveland, the Democratic candidate. They formed no party organization of their own. Their critics accused them of regarding themselves as superior to other Republicans in character and intelligence, and dubbed them "mugwumps," an Algonquin word denoting "chiefs" or "big men." The name is sometimes applied nowadays to voters independent of any party.

**Mühlberg**. A town of E. Germany, in Saxony-Anhalt, on the Elbe, 35 m. N.N.W. of Dresden. Its main church dated from the 13th century; others, and a castle, from the 15th and 16th. There is a trade in timber and agricultural produce, while beet sugar is manufactured. After being long part of Saxony, the town was given to Prussia in 1815. Pop. (1950) 5,000.

Mühlberg is famous for the battle fought here between the emperor Charles V and John Frederick, elector of Saxony, one of the leaders of Protestantism, April 24, 1547. With the assistance of Maurice of Saxony, Charles suddenly invaded Saxony, which its ruler, John Frederick, hastened from S. Germany, where he commanded the army of the Protestant league, to defend. The armies met at Mühlberg, where the emperor's troops, aided by the genius of Maurice, were victorious. John Frederick, taken prisoner, surrendered his electorate to Maurice.

In the Second Great War it was captured by the U.S. 1st army, April 5, 1945. After the German surrender it lay in the Russian zone of occupation.

**Mühlhausen**. Town of E. Germany, in Thuringia, on the Unstrut, 25 m. N.W. of Gotha, with which it is connected by rly. Of many old buildings, the chief are the 16th century town hall and the churches of S. Mary and S. Blasius, both 14th century edifices, though later reconstructed. Around the old town are modern suburbs. There are manufactures of textiles, machinery, chemicals, tobacco, and leather. After being in Thuringia, it was made a free city, but this privilege was taken away in 1802, and in 1815 it became part of Prussia. Armoured columns of the U.S. 3rd army captured Mühlhausen on April 5, 1945, meeting with only light German resistance.

The town lay after the German surrender within the Russian zone of occupation. Pop. 39,367.

**Muhu** or **Mõõn**. Island of the Baltic, off the coast of Estonia, of which it forms part. It is 14 m. broad and 14 m. long, and lies between the mainland and the islands Dago and Osel, granted by Estonia to Russia as military bases in Sept., 1939. Occupied by the Germans in 1940, Muhu was recaptured by the Russians, Sept. 30, 1944.

**Muilrea**. Mt. in the S.W. of co. Mayo, Eire. It stands on the N. side of Killary Bay. Alt. 2,688 ft.

**Muir**, **JOHN RAMSAY BRICE** (1872-1941). British historian and politician, known as Ramsay Muir.

He became lecturer, 1900, and professor, 1906, of modern history at Liverpool, and in 1913 occupied the chair of history at Manchester, resigning in



Ramsay Muir,  
British historian

1921. Entering politics, he was elected Liberal M.P. for Rochdale, 1923-24, and for many years fought in the Liberal cause, acting as chairman, 1931-33, and president, 1933-36, of the National Liberal Federation. His works included *Atlas of Modern History*, 1911; *The Expansion of Europe*, 1917; *The Interdependent World and its Problems*, 1933. He died May 4, 1941.

**Muir Glacier**. Alaskan glacier fed by the heavy snowfall common to the N.W. of N. America. It discharges into Glacier Bay, a fjord to the W. of Juneau. Nine ice streams flow from an amphitheatre on Mt. Fairweather, 35 m. across, to form the main stream, which is from 6 to 10 m. wide and terminates in an ice cliff at the head of the bay. The cliff was much broken in 1899 by an earthquake; it advances about 7 ft. daily during its period of greatest movement, but has receded over 25 m. since 1794. The base of the cliff is 900 ft. thick and 760 ft. below sea level. Giant bergs break away and float seawards.

**Muirkirk**. Town of Ayrshire, Scotland. On the river Ayr, 28 m. from Ayr, it has a rly. station, with chief industries coal and ironstone mining and ironworks. Pop. 4,358.

**Mukden**. City of N.E. China. The capital of Liaoning prov., Mukden is the cradle of the Manchu dynasty, which reigned over China for 268 years. It is the centre of heavy industry for the N. In the



Mukden. Scene in one of the principal thoroughfares of this city of N.E. China

vicinity are the tombs of the Imperial family. The circuit of the town walls is 10 m., with an inner wall of 3 m. containing the palace and government buildings. The town was opened to foreign trade by agreement with the U.S.A. in 1903. It is served by the Peking-Mukden rly., and by the South Manchuria rly. In 1931 Japanese troops occupied the former Chinese province of Manchuria, and in Feb., 1932, a new state called by the Japanese Manchukuo had Mukden as its largest city.

Russian forces occupied Mukden Aug. 19-20, 1945, Chinese govt. troops entering the city on Dec. 13. The Russians left on March 12, 1946, taking with them industrial equipment which they claimed as former enemy property, and therefore as reparations. Mukden was entered by Chinese Communist forces, Oct. 31, 1948. Pop. 1,135,801. See Manchuria.

**Mukden, BATTLE OF**. Fought between the Russians and the Japanese, Feb. 20-March 10, 1905. In Oct., 1904, the Russians had attacked Japanese positions on the Sha-Ho, and the rival forces were still occupying much the same lines. Both had strengthened their defences, the Russians holding a front about 60 m. long. Their general Kuropatkin had about 300,000 men; the Japanese under Oyama were almost equal.

Strengthened by the army that had just captured Port Arthur, Oyama proceeded to execute his plan for breaking the Russian front. On Feb. 20 a new Japanese army, the 5th, working through the mountains towards the Russian left, came into contact with the foe, and after severe fighting two passes were stormed. On Feb. 27 Oyama's centre opened an attack on the opposing Russians, but more important was the appearance, quite unexpected by the Russians, of the 4th army, the

men of Port Arthur, upon their right flank. Kuropatkin, misled as to his foe's intentions, drew in his right wing, while the Japanese were curving round the two ends of his army. Japanese losses were terribly high, but the danger to Russian communications made a retreat inevitable. This took the form of a series of rearguard actions and after a time the Russians became demoralised. Mukden was evacuated by March 10, and battle and pursuit were soon over. The Russians lost 26,500 killed and 40,000 prisoners; the Japanese had 41,000 killed and wounded. See Russo-Japanese War.

**Mula**. Town of Spain, in the prov. of Murcia. It stands on the river Mula, a small tributary of the Segura, 20 m. W.N.W. of Murcia. Trade is carried on in wine, oil, and farm produce. In the vicinity are the Baños de Mula, with thermal sulphur springs. Pop. 13,460.

**Mulatto** (Sp. *mulato*, young mule). Half-breed, especially the offspring—and their descendants—of parents whereof one is of white, the other of a negro race. The hair is usually negroid, the colour intermediate. The offspring of a mulatto and a white is a quadroon (one-fourth black); of a quadroon and a white an octoroon (one-eighth black). See Negro.

**Mulberry** (*Morus*). Name given to trees and shrubs of the family Moraceae, natives of the N. temperate regions. There are ten species, of which the best known are the black mulberry (*M. nigra*), the white (*M. alba*), and the red (*M. rubra*). All have heart-shaped leaves with toothed edges, and inconspicuous greenish-white unisexual flowers, produced in spikes and wind-fertilised. The compound fruit is somewhat similar in form to that of the raspberry, but has a very different origin, the latter being the product of a single flower, whilst each mulberry is due



to the coalescence of all the fruits from a spike of female flowers. The black or common mulberry, a native of the Orient, was introduced to England in 1548, the first trees being planted at Syon House, Isleworth. James I fostered the planting of mulberry gardens around London, in the belief that the silk industry might be established there.

The tree succeeds in any deep, rather damp soil, but the two others named prefer a dry soil. The white mulberry, a native of China, was introduced to Great Britain in 1596, for the sake of its leaves, which are better for silkworm culture. Red mulberry, with long, purple, pleasant-flavoured fruit, is a N. American tree of larger proportions (40-70 ft. high). Mulberries may be raised from seed, but more expeditiously by large cuttings, or layering in autumn.

**Mulberry.** Code name for the operation by which the prefabricated harbours used off the Normandy beaches to support the Allied invaders of Europe in 1944 were constructed. The Allied assault on the Continent was a gigantic undertaking which, it was estimated, would require the landing of 12,000 tons of stores and 2,500 vehicles daily for a period of 90 days. The enemy was known to have fortified the ports on the French coast with great strength, and the virtual impossibility of capturing one by direct assault from the sea was demonstrated by the attack on Dieppe in Aug., 1942 (see Dieppe: Dieppe Raid, 1942). It was therefore decided that the invasion would have to be made over open beaches, and already in 1942 Winston Churchill had given orders: "Piers for use on flat beaches. They must float up and down with the tide."

Early in 1943 prototypes of a pier and a pierhead were constructed and tested, and the construction of two artificial harbours was part of the invasion plan submitted to, and approved by, the combined chiefs of staff at Quebec in Aug., 1943. Despite the problems of man-power—20,000 workers were needed to construct the caissons (*v.i.*) alone—and material resources, it was decided that the harbour units should be constructed in Great Britain; the greater facilities existing in America being outweighed by risks of the long tow across the Atlantic.

Each of the two artificial harbours, Mulberry A for the American sector, Mulberry B for the British, was designed to enclose a

water area roughly equivalent to that of Dover harbour, and consisted of an inner fixed breakwater made of concrete caissons (code name Phoenix). Floating piers built on the pontoon principle ran out from the beaches to spud pierheads against which ships could tie up sheltered by the caisson breakwater. For technical reasons, the caissons could not be laid in water deeper than  $5\frac{1}{2}$  fathoms, which would limit the use of the harbours to moderate sized ships of the coaster type; a second, or outer, breakwater of floating bombardons was therefore designed. Eventually, owing to the time required for construction and the number of tugs for towing, the plan for the bombardon breakwater was curtailed, and a preliminary breakwater of blockships (code name Gooseberry) was decided on. Some 60 naval and merchant ships, including the old target ship Centurion, the French battleship Courbet, and the Dutch cruiser Sumatra, were used to make five sections with a total length of 24,000 ft. off the invasion beaches.

#### Building the Caissons

The concrete box-shaped caissons, of which 212 were built, were of six sizes, the largest displacing 6,044 tons, the smallest 1,672 tons.

These caissons were built in graving docks at Southampton, Goole, Middlesbrough, Tilbury, and the East India dock, London, in an entrance lock at Plymouth, on slipways at Langston, Portsmouth, and Southampton, and in shallow basins excavated in open land alongside the Thames; 600,000 tons of concrete, 31,000 tons of steel girders, 1,500,000 yds. of steel shuttering, 45,000,000 ft. of timber, and 100 m. of wire cable went into them; 147 were completed before D-day (June 6, 1944), the remaining 65, used as additional breakwaters and as replacements, by early Aug. Each caisson had quarters for a crew, and for artillery detachments to man during transit the defensive armament of Bofors guns.

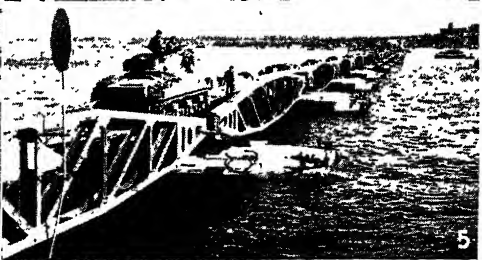
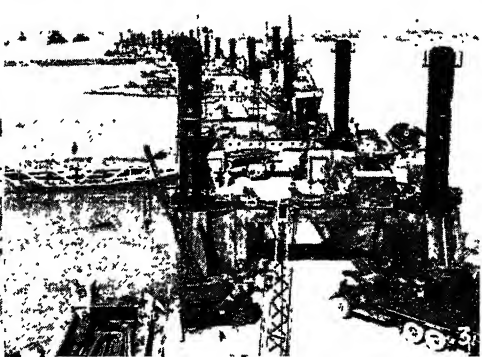
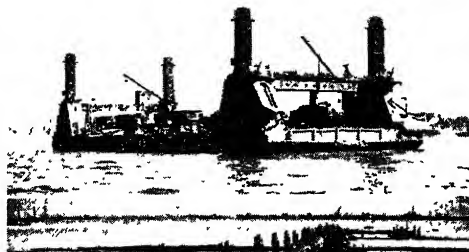
The piers were designed to remain stable at the shore end on a shelving beach with a rise and fall of the tide exceeding 20 ft. Each pier was made up in 80 ft. spans, was supported on pontoons called Beetles, had a road width of 10 ft., and weighed 30 tons. The piers were towed across the Channel in 500 ft. lengths; that is, six spans and the shore-ramp float. Seven miles of piers were built for the two harbours.

Most of the pierheads, or spuds, were built in Scottish ports, a prototype having been tested in the Solway Firth in April, 1943. Each pierhead weighed over 1,000 tons, was 200 ft. long, had a beam of 60 ft., and consisted of a steel pontoon riding within four steel legs or spuds, which were power-operated and driven into the sea bed. The pierheads slid up or down the legs according to the tide, so that they maintained a fairly constant level. Each pierhead contained generating sets, storage space, and accommodation for the personnel serving it.

The piers carrying the roadways were flexibly attached to the pierheads so that in beam winds they could slew right or left a distance of 40° without interrupting the flow of traffic passing over them at a speed of 25 m.p.h. The roadway itself also had considerable flexibility, as it was composed of separate panels loosely bolted to the cross members.

The blockships crossed the Channel safely behind the assault forces and were then sunk by explosive charges during the five days following June 6. Meanwhile the caissons, breakwaters, and piers, about 1,000,000 tons in all, were being towed over 100 m. at an average speed of 4 knots—some 210 tows for which 85 tugs were used. The concrete caissons were accurately sunk in places selected off Arromanches for Mulberry B, off St. Laurent for Mulberry A, by a special surveying party which landed on D-day. Royal Engineers ("Seabees" in the U.S. harbour), with a naval beach commando and a detachment of Royal Marines, also landed on D-day, cleared mines, cut ramps in the esplanades, and prepared roadways down to the beaches ready to receive the shore ends of the piers. By June 18 more than half the caissons were in position, one pier hundreds of yards long and several pierheads were completed, and coasters could unload at any state of the tide.

The operations had gone according to plan with very few sea accidents, and, owing to Allied air superiority, little enemy interference; but on June 19 there blew up from the N.E. the worst June gale for 40 years. It continued for three days, the half-constructed harbours being exposed to its full force. Mulberry A, in the angle between the coast of Calvados and the Cotentin pen., suffered severely, the piers being twisted beyond repair. The Americans



Mulberry B, shown here, was assembled off Arromanches, Normandy, following the first landings of the Allies there, June 6, 1944. 1. Concrete caisson under tow for crossing the channel. 2 Spud pierhead

arriving off Arromanches. 3. Wharf formed from pierheads in line. 4. Inshore end of pier completed. 5. Pier giving exit to Arromanches. 6 General view of Mulberry B when completed and in use

**MULBERRY: BRITISH PREFABRICATED PORT WHICH MADE HISTORY IN 1944**

*British Official*

captured Cherbourg June 30, and therefore abandoned Mulberry A. Mulberry B, partially protected by the Calvados reef, suffered less.

The experimental floating breakwater of bombardons broke up; but whereas unloading directly on the beaches was impossible during the storm, 800 tons of petrol and ammunition as well as many troops were landed at the piers

at Arromanches even on the worst day. All pier equipment on passage when the gale began was sunk, but only one caisson was lost on the journey. After the gale, a long spell of rough weather prevented pier equipment from being towed across the Channel, so that the harbour was not of maximum value until well into July. In the first 100 days after June 6, 2,200,000 men were landed with 4,000,000 tons of stores and 500,000 vehicles.

Spare Mulberry caissons were towed from England to Walcheren island in 1945, where they were used to stop the gaps blown in the dykes by the R.A.F. in Oct., 1944, before the Allied seaborne assault on the island.

The British harbour on the Normandy coast is to be preserved as a war memorial to the British by the French government. *Consult* Operation Neptune, K. Edwards, 1946.

**Mulcaster**, RICHARD (c. 1530-1611). English schoolmaster. A native of Cumberland, he was educated at Eton under Udall; at King's, Cambridge; and at Christ Church, Oxford. He was the first headmaster of Merchant Taylors' school, 1561-86; vicar of Cranbrook, Kent, 1590; high master of S. Paul's school, 1596-1608; and became in 1598 rector of Stanford Rivers, Essex, where he died April 15, 1611, and is buried. He wrote educational works, including *Positions*, 1581, and believed in good education for girls and thorough training of teachers.

**Mulch**. Dressing of moist stable manure, leaf mould, straw, bracken, or other manurial substance applied to soil round transplanted trees or shrubs. Its object is to afford protection from frost, conserve moisture, and supply nutriment which rain will carry down to the roots of the plants.

**Mule**. Name strictly applying to a hybrid between a male ass and a mare. All the various members of the horse



Mule. Specimen bred from a Catalonian jack-ass and an English mare  
W. S. Berridge, F.Z.S.

in appearance and the mother in size. Hence mules are large animals of ass-like character.

In order to secure size, mules are usually bred from the Poitou and Spanish jack-asses, which are of exceptional height and are kept almost exclusively for this purpose. A good mule may stand 16 hands high at the withers and be almost equal in strength to a horse of the same size. The long ears, small hoofs, and tendency to a tufted tail always distinguish the mule from the horse.

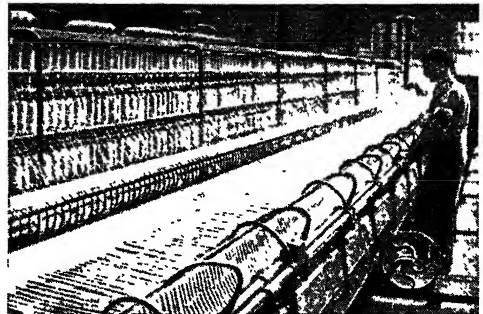
Mules are exceedingly useful for draught and pack work, especially in mountainous and difficult country, being much harder than the horse, less liable to disease, less particular in the matter of food, of greater endurance, longer lived, and very sure footed. A mule is fit for work when four years old, is at its prime from eight to 12, and will continue to work well till 14 or 15. In spite of its proverbial character, the mule is not as a rule obstinate when well treated, but is particularly docile.

**Mule**. Machine used for spinning. It was invented by Samuel Crompton and improved by Richard Roberts, both connected with the textile industry in Lancashire. The mule is an intermittent machine for converting rovings into yarn, and it performs a complex cycle of movements. The rovings are drawn from large bobbins carried upon the upright creel at the back of the machine, and they pass through pairs of

geared rollers which draft or elongate the lightly twisted roving. The material is carried forward to an inclined spindle mounted upon the movable carriage of the mule. The spindle is driven by a band from the cylinder known as the tin roller. First the carriage carrying the spindles travels forward, thus stretching the roving, and during this period the spindle is turning at high speed without winding up the yarn. Stretching and twisting going on simultaneously, the weak places in the roving are continually being reinforced, as the twist lends strength to the weak portions. The carriage backs slightly, and the speed of the spindles is reduced. The carriage begins to run in, and the yarn stretched and twisted on the outward journey is wound upon the spindles during the inward run, the position of the yarn being controlled by the movement of faller and counter-faller wires.

This machine belongs pre-eminently to the Lancashire cotton industry, and it gives a full and spongy yarn. Mules of a slightly modified type are used for woollens and, especially upon the Continent, for worsteds. More floor space is occupied by mules than by the continuous spinning frames, and more skill is required in their manipulation, but with suitably adjusted mule machinery yarns of every variety from the coarsest to the ultra-fine are produced to perfection. The mule is capable of great delicacy of operation, and the details of its construction have been the subject of immense study. *See* Cotton; Spinning.

**Mulgrave Castle**. Seat of the marquess of Normanby at Sandesend, W. of Whitby, in the N. Riding of Yorkshire, England. In the grounds are the remains of the 11th century stronghold of a Saxon duke named Wada. About 1625 the property passed to Edmund,



Mule used in cotton spinning. The machine illustrated has 1,300 spindles, spinning and winding 4,000 miles of thread in a day

Lord Sheffield of Butterwick, created earl of Mulgrave, a title revived in 1812 in favour of Sir Henry Phipps, an ancestor of the marquess of Normanby.

**Mulhacen** OR MULAHACEN, CERRO DE. Mountain of Spain, in the prov. of Granada. The culminating point of the Sierra Nevada, it is the loftiest peak in Spain, reaching an alt. of 11,420 ft. The snow line occurs at approximately 10,000 ft.

**Mülheim**. Name of two towns in Germany. Both are river ports, one being on the Rhine and the other on the Ruhr.

Mülheim-on-Rhine lies on the right bank of the river 2 m. below Cologne, with which it was incorporated in 1914. It has a ship-building yard and a commodious river harbour; its industries include tanning, brewing, and the manufacture of velvet and silk. It became a corporate town in 1322 and much of its later prosperity was due to the Protestants who settled there from Cologne, which in the Second Great War fell to troops of the U.S. 1st army, March 6, 1945, and was included after the German surrender in the British zone of occupation. Pop. (pre-war) 60,000.

Mülheim-on-the-Ruhr lies on the river Ruhr 7 m. W. of Essen. Its chief industry is iron-working; it also manufactures leather, tobacco, paper, and beer, and is a rly. centre. It received municipal rights in 1508. Its twelfth-century church was severely damaged in the Second Great War. Captured by units of the U.S. 9th army, April 9, 1945, it was subsequently in the British occupied zone. Pop. (1939) 136,805.

**Mulhouse** (Ger. *Mülhausen*). Town of Alsace, France. It stands on the Ill, 56 m. S. by W. of Strasbourg, and on the Rhine-Rhône canal. It has been a centre of cotton manufacture since the mid-18th century; other industries include engineering, dyeing, and paper manufacture. The town possesses the remnants of the bishop of Strasbourg's castle, a town hall built in 1431 and renovated in 1552, and S. Stephen's church (14th century). Made a free city in 1261, it was for long linked with Swit-

zerland, but afterwards became German. In 1797 it was united with France, and in 1871 became a part of Germany. The scene of heavy fighting in the First Great War, it was restored to France in 1919. Occupied by German forces shortly before the Franco-German armistice of 1940, Mulhouse was liberated by the French 1st army on Nov. 22, 1944. Pop. 87,655.

**Mulkear**. River of Eire, which rises in two head-streams—one in the W. of co. Tipperary and the other almost wholly in co. Limerick—and flows N.W. for 32 m. to the Shannon, which it enters 4 m. above Limerick city.

**Mull**. Name for a headland or long promontory, derived from the Gaelic. Examples of its use in western Scotland are the mull of Kintyre, and the mull of Galloway.

**Mull**. Island of Inner Hebrides, Argyllshire, Scotland. It is 7 m. W. of Oban and separated from the mainland by the firth of Lorne and the Sound of Mull. The third largest of the Western Islands, it has a mountainous surface (Ben More, 3,169 ft.) and a rugged and deeply indented coast, fringed on the W. with a number of smaller islands. It is almost entirely underlain by lavas and rocks related to the volcanic activity of Tertiary times. Grazing is the principal industry. There are a number of picturesque glens and fresh water lochs. Tobermory, in the N., is the chief town. Length 30 m., breadth 29 m.

**Mull**. Sound or channel between the island of Mull and Morven peninsula, Argyllshire, Scotland. There is beautiful scenery along its shores. It is 20 m. long and from  $1\frac{1}{2}$  to 3 miles wide.

**Mullah** OR MOLLAE. Mahomedan term for a teacher or scholar, particularly one learned in civil and ecclesiastical law. It is also applied to a mosque officer, and in India is the usual term for a

Mahomedan schoolmaster. The influence and fanaticism of the so-called "mad Mullahs" have caused serious disturbances in India and Somaliland. The raids by the leader of the rebel dervishes in the latter country provoked punitive expeditions by the British, 1901–05. See Somaliland.

**Mullein** OR AARON'S ROD (*Verbascum thapsus*). Biennial herb of the family Scrophulariaceae, native of Europe and N. and W. Asia. The first year it forms a cluster of large, oval, lance-shaped, very woolly leaves from 1 ft. to 18 ins. long. The second year a stout, woolly, leafy stem 3 ft. high is sent up, ending in a long spike of yellow flowers. Wool from leaves and stem was utilised for lamp-wicks. See Aaron's Rod, illus.

**Müller, FRIEDRICH MAX**. See Max Müller.

**Müller, GEORGE** (1805–98). German-born British philanthropist. Born near Halberstadt, Sept. 27, 1805, he was educated in Germany. In 1829 he came to England with a view to becoming a missionary to the Jews, but in 1830 undertook a pastorate at Teignmouth, Devon, becoming a naturalised British subject. He practised theretheideals he followed throughout his life, trusting to prayer to supply material wants. In Bristol he started an orphanage. Soon he had over 2,000 children under his care, and later erected five large buildings to house them at Ashley-down. His book, *The Lord's Dealings with George Müller*, greatly helped him to obtain funds. He died at Bristol, March 10, 1898.

**Müller, HERMANN JOSEPH** (b. 1890). American geneticist. He was born on Dec. 21, 1890, in New York City, and educated at Columbia university. While professor of zoology at Texas university, 1920–25, he began his research in the problems of heredity. He was senior geneticist at the Institute of Genetics, Moscow, 1933–36, and lecturer at the Institute of Animal Genetics, Edinburgh, 1937–40. In 1946 he received a grant from the American cancer society, and in the same year was awarded the Nobel prize in medicine and physiology. His work on heredity changes caused by X-rays striking the genes and chromosomes of living cells



George Müller, British philanthropist



Mulhouse, France. The medieval town hall, showing the covered entrance steps

assumed added significance after the dropping of atomic bombs on Hiroshima and Nagasaki.

**Müller, JOHANNES** (1801-58). German physiologist. Born at Coblenz, July 14, 1801, he was educated at Bonn,



Johannes Müller,  
German physiologist

where he studied physiology. In 1826 he was made professor of physiology there, and in 1833 occupied a chair at Berlin. His important contributions to our knowledge of the complex mechanism of the human body have caused him to be regarded as the founder of modern physiology. He died April 28, 1858. His chief work was *Handbook of Human Physiology*, Eng. trans. 1840-49.

**Müller, PAUL** (b. 1899). Swiss chemist, awarded the Nobel prize for medicine, 1948. See N.V.

**Müller, WILLIAM JOHN** (1812-45). British painter. Born at Bristol, June 28, 1812, he was the son of a German, the curator of the Bristol museum. He travelled on the Continent and in Egypt and Asia Minor, making many sketches, but exhibited few pictures—some at the R.A. He died at Bristol, Sept. 8, 1845. The Tate Gallery possesses examples of his work in oils and in water-colours.

**Mullerian Duct.** A term in embryology. In the embryo of any vertebrate the coelom communicates with the exterior by a duct which will subsequently be concerned with the removal of genital products, i.e. eggs or sperms. In the embryo destined to develop into a female, a shelf along the wall of the coelom curls up to form a tube, which is the Mullerian duct. It forms the oviduct, and is quite distinct in origin from the duct which removes the sperms in the male. Its development is encouraged by the secretion of oestrogens (*q.v.*). Vestiges of the Mullerian system persist in the male in the prostate gland (*q.v.*).

**Müller's Larva.** Free-swimming larval form of the group of Platyhelminth worms known as Polyclads. It is oval in shape, with a series of elongated processes fringed with long cilia. It is sufficiently similar to the free swimming larval stage (trochophore) of Annelid worms to indicate that there is close phylogenetic relationship.

**Mullet.** Name applied generally to the numerous species comprised in two unrelated genera of



Mullet. Specimen of red mullet,  
*Mullus barbatus*

marine food fishes. Red mullets (*Mullus*), of which there are about 40 species, are represented in Great Britain by the common red mullet of the markets. It has a fine flavour, and its beautiful colour adds to its attractiveness. Grey mullets (*Mugilidae*) include about 70 species, of which three occur in the British seas. They are found largely in the brackish water of river estuaries, and are important food fishes.

**Mullet.** In heraldry, a star of five, six, or more points. It is the mark of cadency (*q.v.*) for the third son and his house. When borne pierced, mullets undoubtedly represent spur rows. They differ from stars which have wavy points.

**Mulligatawny** (Tamil, *milaḡattannir*, pepper water). Soup made hot with curry-powder. Boiled fowl and rice form a usual basis, though other meat may be used.

**Mullingar.** Market town and co. town of Westmeath, Eire. Almost encircled by the Royal Canal, it stands on the Brosna river, 50 m. W.N.W. of Dublin, and is a junction on the Eire state rlys. The buildings include the R.C. cathedral for the diocese of Meath and those erected for county business. There is a trade in agricultural produce, and a few manufactures, while important horse and cattle fairs are held. Pop. 5,237.

**Mullion.** In architecture, the vertical division between the lights of a window. It originated with the reduction in width of the solid pier (*q.v.*) or piers between coupled lancet windows, and is mainly a development of late Gothic building. In church architecture and that of large domestic dwellings, the mullion is of stone, in lesser structures of wood. The traditional mullion of the 15th century is a splayed or moulded shaft, but with the spread-



Mullion. Window  
with stone mullion,  
indicated by A

ing of Renaissance influences this gave place to a rectangular shaft scrolled with a floriated or arabesque design; the Tudor mullion is mainly like this. In pure Renaissance work mullions disappear.

**Mullion.** Village and parish of Cornwall, England. It stands on Mount's Bay, 5 m. N.W. of Lizard Head. It has an old church, S. Melan's, in which are some interesting carved bench ends. Mullion Cove, or Porthmullion, a beauty spot, belongs to the National Trust. It can be reached by road from Helston. Pop. 954.

**Mulready, WILLIAM** (1786-1863). British painter. Born at Ennis, Clare, Ireland, April 1, 1786, he

removed with his family from Dublin to London in 1792. A pupil of Baynes and Banks, the sculptor, he entered the R.A. schools in 1800. In 1802 he gained the silver palette of the Society of Arts, in 1804 exhibited at the R.A., and between 1807 and 1809 illustrated children's books. He painted mainly genre pictures in the style of the Dutch masters, but later developed a more personal manner. He died in Bayswater, July 7, 1863.

Mulready's best pictures include *Choosing the Wedding Gown*, *The Sonnet*, *The Convalescent*, all in the Victoria and Albert Museum, South Kensington; *The Bathers*, *The Toy Seller*, both in the National Gallery of Ireland; *The Last In*, Tate Gallery. He designed the first penny postage envelope, 1840. This Mulready envelope bore on its face an allegorical representation of Britannia sending out messages all over the world by means of elephants, etc., and was effectively caricatured by John Leech in *Punch*. Perfect specimens are rare and much valued by collectors.

**Multan** or **MOOLTAN**. Div. and dist. of Pakistan in W. Punjab. The div. comprises six districts in the S.W. of the prov. The people are chiefly Mahomedans. A third of the area is cultivated, wheat and cotton being the chief crops. The dist. consists of the S. of the Bari doab. Rainfall is only 6 ins. per annum, and cultivation, which covers a quarter of the area, is entirely dependent upon irrigation. Area, div., 31,763 sq. m.; dist., 5,653 sq. m. Pop., div., 6,365,817; dist., 1,484,333.



William Mulready,  
British painter



**Multan** OR MOOLTAN. City of Pakistan, in W. Punjab. It stands on the Chenab below its confluence with the Ravi. A town of great antiquity, it has been identified as the capital of the Malli, who were conquered by Alexander the Great. Multan is a great trading centre, which collects cotton, wheat, wool, etc., for export S. down the Indus valley, and supplies Afghan traders from Kandahar with indigo, cottons, sugar, and shoes in exchange for drugs, raw silk, and spices. It manufactures shawls and carpets. Pop. 142,768.

**Multiple** (Lat. *multiplex*, with many folds). Term applied to something having many parts. A multiple shop (*q.v.*), business owns many shops; multiple stars are a cluster of three or more individual stars relatively isolated in space; the law of multiple proportions is known to chemists. Multi- (Lat., many) may replace multiple as an adjective, *e.g.* multi-purpose tool.

In mathematics a multiple of a number has the latter as one of its factors; 35 is a multiple of 5 and of 7, while  $8a^3$  is a multiple of  $2a$ . A common multiple of certain numbers has each of them as one factor: thus 420 is a common multiple of 2, 3, 5, 7, since each of those numbers will go into it exactly. The least common multiple (L.C.M.) of certain numbers is the smallest number that has each of them as a factor; thus, 210 is the L.C.M. of 2, 3, 5, 7. Many mathematical operations require the resolution of multiples into their factors and the elimination of common factors.

**Multiple Shop.** Shop operating a number of branches under the same ownership. The term covers not only chain stores (*q.v.*), but also

with growing prosperity opened branches. Others started as wholesalers, later selling goods to the public direct and thus receiving both wholesale and retail profits. "Tied" public houses are in a sense branches of a multiple shop.

Many retailers entered the wholesale trade, and their goods, becoming known to the public, were distributed not only through the firm's own branches, but also by local retailers acting as agents. The advantages of the multiple trader over the small shopkeeper are a widespread goodwill and the ability to buy on a larger scale. Many multiple shops have also effected economies not available to the small trader by forming their own subsidiaries to deal with building, transport, etc.

**Multiplication.** In mathematics, the operation of repeated addition. Multiplication of £1 10s. by 3 means £1 10s. plus £1 10s. plus £1 10s. The process is indicated by the sign  $\times$  ( $7 \times 12 = 84$ ), or by a dot on the line ( $7.12 = 84$ ), or by placing a multiplier outside a bracket  $3(6-2) = 12$ . In algebra simple juxtaposition with or without brackets is generally sufficient (thus  $ab$  means  $a$  times  $b$ ). Repeated multiplication of a number by itself is denoted by an index:  $3^4$  means  $3.3.3.3$ , or 81. Such a product is termed a power of the number; here the 4th power of 3.

Multiplication may be lightened by using tables of squares, of quarter-squares (which use the fact that  $ab = \frac{1}{2}(a+b)^2 - \frac{1}{2}(a-b)^2$ ), specialized tables of areas, volumes, interest, wages, prices, etc., tables of logarithms (*q.v.*), and by slide rules, calculators, and calculating machines (*q.v.*). See Algebra; Arithmetic.

#### M u m b l e s.

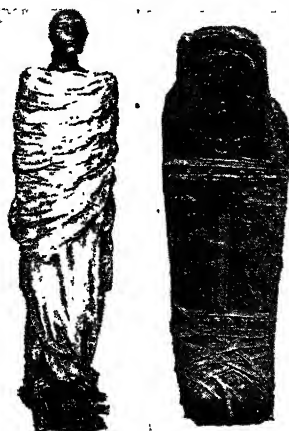
Village and watering-place of Glamorganshire, Wales. It stands on the W. shore of Swansea Bay on the non-nationalised Mumbles light rly. (electric). Oyster fishing is carried on. Mumbles Head, at the W. end of

the bay, includes two small islands, on one of which is a lighthouse.

**Mumbo Jumbo.** Name of a spirit worshipped by the Mandingos of W. Africa. Mungo Park relates that he is invoked for the purpose of punishing women offenders, after which a man appears,

disguised in the garb of Mumbo Jumbo, ties the culprit to a post, and scourges her. In a wider sense the term is applied to any object of irrational superstition.

**Mummy** (Arab. *mumiya*, bitumen). Dead body embalmed with preservative substances in prepara-



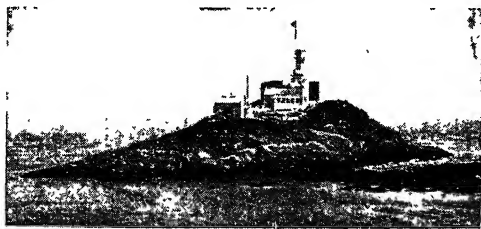
Mummy. Examples of the embalmed and swathed bodies of Egyptians who died 3,000 years ago

tion for burial. In Neolithic Egypt interment in skins or mats in sand-pits resulted in a measure of preservation by natural desiccation. When closed coffins were devised, the speedier decay of the body led to experiment with artificial preservatives, at first perhaps limited to crude natron. The earliest attempt at mummification yet found came from a II dynasty tomb at Sakkara; the earliest mummy enswathed in bandages smeared with resinous paste from a V dynasty tomb at Medum.

In the course of centuries other substances were employed, including bitumen, caustic soda, balsams, spices, honey, and drugs. By the XXI dynasty, after 1100 B.C., the process involved incision of the left flank with a flint knife for removing the viscera, extraction of the brain, usually through the nostrils with bronze hooks, and stuffing of the cavities with packing materials.

Each limb and digit was separately swathed in mummy-cloth, consisting of linen bandages 2 to 10 ins. wide and up to 17 ft. long. An outer sheet 8 ft. by 4 ft. lay over all.

The bodies, laid out in the extended position, were protected by amulets and ritual texts, enswathed in bead network, accompanied by mummy-like statuettes called ushabtis, enclosed in one or two mummy-cases of sycamore, cedar, cartonnage, or faience,



Mumbles, South Wales. Lighthouse and telegraph station off Mumbles Head Frith

businesses not originally founded as multiple shops which have opened new branches to take advantage of increasing trade. Multiple shops in Great Britain are organized on various lines. Some are chain stores proper. Others began with a single store and

protected by oblong coffins, and, if royal or wealthy personages, enshrined in stone sarcophagi. The face was treated with fidelity, sometimes by encasing in a plaster mask, out of which grew, after 100 B.C., the Greco-Roman custom of placing portraits in tempera over the enswathed head. Christian Copts continued the practice in modified forms, and it survived until about A.D. 700.

Mummification was applied also to sacred animals, such as the particular cat that personified the Bast goddess, and the bull sacred to Apis. Afterwards all animals of the species secured this form of immortality, and great cemeteries have been found of cats at Bubastis, fish at Esna, ibises near Abydos, and the like. These mummied animals were sometimes gilded and enclosed in coffins.

In 1881 and 1898 there were recovered at Thebes hoards of royal mummies, which were removed from their original tombs in order to frustrate tomb-robbers. Removed to Cairo, they were found to include the mummied remains of famous Pharaohs of the XVIII and XIX dynasties, including Thothmes III, Amenhotep III, Seti I, Rameses II, and Menephtah. See Animal Worship; Burial Customs; Embalming.

**Mumps** or EPIDEMIC PAROTITIS. Acute infectious disease. The micro-organism responsible has not yet been isolated, but is almost certainly a filterable virus. It is most frequent in childhood and adolescence, males being more often attacked than females, and is generally more prevalent in spring and autumn than at other seasons. The incubation period is from two to three weeks. The onset is marked by fever, which rarely exceeds 101° F., but exceptionally may be as high as 104° F. Pain is felt below the ear, and within 48 hours there is marked swelling of the neck and cheek. A day or two later the other side usually becomes swollen as well, as may the glands under the chin.

The patient finds difficulty in opening his mouth, and speech and swallowing are affected. After a week or 10 days the swelling subsides and recovery is rapid. Risk of conveying the disease to others is slight after disappearance of the swelling. Swelling and inflammation of the testes in males and of the breasts and ovaries in females may arise, but usually are serious only in the male, for whom mumps may be a cause of sterility as destroying sperm-producing tis-

sues. Treatment consists in keeping the patient in bed with light, soft diet and attention to working of the bowels. Pain in the neck may be relieved by applying either hot or cold compresses.

**Muncaster Castle.** Residence at Ravensglass, Cumberland, England, until 1917 the seat of Baron Muncaster. On the site of a Roman fortress known as Mulcastre, or the castle on the meols or sandhills, it is half-way up Muncaster Fell and commands beautiful views up the valley of the Esk. In the possession of the Pennington family since the Conquest, it was rebuilt in 1800. After the battle of Hexham, 1461, Henry VI took refuge here, and is said to have given to Sir John Pennington the curious glass cup, known as The Luck of Muncaster, from which the family have been baptized ever since.

**Munch, EDVARD** (1863-1944). Norwegian painter. Born at Loeten, Dec. 12, 1863, he studied art in Oslo and worked with an Impressionist group in Paris. Influenced by Seurat's *pointillisme*, he held his first exhibition in Berlin, 1892, and so revolutionary was his style that the show had to be closed. He painted in 1907 his *Frieze of Life*, a masterpiece which was sold and distributed between museums in Oslo, Berlin, and Lübeck. At the greatest of Munch's exhibitions, in 1927, nearly 500 works were shown. Essentially an innovator, he founded the German expressionist movement. His work was banned by the Nazis in 1933. He died in Oslo, Jan. 23, 1944.

**Munchausen, OR MÜNCHHAUSEN, KARL FRIEDRICH HERONIMUS, BARON VON** (1720-97). German hero of incredible adventures. Born at Bodenwerder, Hanover, May 11, 1720, he was a cavalry officer in Russian campaigns against the Turks, retired in 1760, and died Feb. 22, 1797. A collection of the stories attributed to him, compiled by his compatriot and acquaintance, Raspe, and taken in part from Bebel's *Facetiae Bebelianae*, 1508, and from Lange's *Deliciae Academicæ*, 1765, was first published in English under the title of Baron Munchausen's Narrative of his Marvellous Travels and Campaigns in Russia, 1785. Later editions contain matter stolen from Lucian's *True History* and stories designed to ridicule Montgolfier's balloon ascents, Bruce's African explorations, and other contemporary sensations. Many stories in the first edition may be regarded as

authentic Munchausen, whether actually true or false.

**München-Gladbach.** Town in the German Rhineland. It is 12 m. W. of Düsseldorf, and was famous as a centre of the textile industry. It was founded by a count of Charlemagne's court, who built the first church; a cathedral erected in 975 stood until the town was virtually destroyed by heavy bombing from the air and ground fighting during the Second Great War. It had a baroque town hall (1663), but was otherwise modern. One-third of the pop. of 127,115 was engaged at textile plants and clothing workshops, while there were metal, engineering, and electrical industries. From ancient times a seat of linen manufacture, the place rapidly developed with the cotton and wool industry in the 19th century. During 1929-33, it was united with Rheyt and Odenkirchen. It fell on March 1, 1945, to the U.S. 9th Army, and after the German surrender lay in the British zone of occupation.

**Muncie.** City of Indiana, U.S.A., the co. seat of Delaware co. It stands on the White river, 55 m. N.E. of Indianapolis, and is served by several rlys., including an extensive inter-urban electric system. It has glass and glassware industries, and manufactures iron and steel, motor vehicles, clothing, and gas engines. Coal and natural gas are obtained locally. Settled in 1834, Muncie received a city charter in 1865. This was the place described in various books by R. and H. Lynd as Middletown (*q.v.*). Pop. 49,720.

**Munda.** Primitive tribe in N. India. Numbering 700,000, they live mostly in Bengal, Bihar, and Orissa, though some work on Assam tea plantations. Dark-brown and long-headed, one-third of them are Hinduised, and a few are Christian. The Munda sub-family of languages, spoken by nearly four million people, includes the Santali, Mundari, Bhumij, and Ho dialects of Kherwari, besides Juang and Kurku. It forms, with the Mon-Khmer sub-family, the Austroasiatic family. See *Austrie*; *Kol*.

**Munday, ANTHONY** (1553-1633). English writer. A Londoner, he was in turn stationer's apprentice, actor, writer of pamphlets against the Jesuits, messenger of the queen's chamber, and City pageant-writer. Concerned in 18 plays, among them Sir John Oldcastle, and The Downfall of Robert, Earl of Huntingdon, he translated romances, including *Palladio of England*, from the

French and Spanish, wrote ballads, and revised Stow's Survey of London. An industrious but inferior writer, he was attacked by Jonson and Marston. He was buried in S. Stephen's church, Coleman Street.

**Mundella, ANTHONY JOHN** (1825-97). British politician. Born in Leicester, March 28, 1825, of



A. J. Mundella,  
British politician  
Russell

mixed Italian and English parentage, he was apprenticed to a hosiery manufacturer, and in 1858 had become a partner in the Nottingham firm of Hine and Co. Active in municipal politics, he won fame in 1866 by his establishment of one of the earliest conciliation boards for the settlement of trade disputes. In 1868 Mundella was returned as a strong Radical to the house of commons by Sheffield. In 1880 he entered Gladstone's government as vice-president of the council, and was responsible in 1881 for the Act which extended the system of compulsory education, and in 1882 for a new and important educational code. President of the board of trade in 1886, he created the labour department. In 1892 he returned to the board, and continued his efforts to better the conditions of workers, but retired in 1894, owing to a public inquiry into the liquidation of a company with which he had been connected. He was returned to parliament unopposed for Brightside, Sheffield. He died July 21, 1897.

**Münden.** W. German town, in Lower Saxony. It is at the point where the Fulda and Werra form the river Weser, 15 m. S.W. of Göttingen, and is a rly. junction, river port, and health resort. Carborundum, chemicals, rubber, tobacco, and wood provide industries. There are two palaces of the Brunswick dukes, dating back to 1070 and 1619; churches of the 15th and 17th centuries; timber buildings; and memorials of the siege by Tilly in 1626. Pop. 20,300.

**Munden, JOSEPH SHEPHERD** (1758-1832). British actor. Born in London, he worked in a shop before joining a strolling company. In the provinces he made a reputation as a comedian, and also managed a group of theatres. He appeared in London in 1790, and at Covent Garden and The Hay-

market became the most popular comedian of his time. From 1813 he acted at Drury Lane until his retirement in 1824. He died Feb. 6, 1832. Munden played Shakespeare's comic characters and appeared in *The Beggar's Opera*, *Tristram Shandy*, and *Every Man in His Humour*. Lamb wrote an essay on his art.

**Mundesley.** A watering-place and seaside village of Norfolk, England. It lies 7 m. S.E. of Cromer and has a rly. station. Once interested in fishing, it has been popularised and its church has been restored, while encroachment of the sea has been checked by walls. The cliff scenery is impressive. Pop. 990.

**Mungo.** A short, fine, woollen fibre recovered from densely compacted rags or cloth-cuttings. It is used in conjunction with longer fibre in manufacturing new cloth, especially in obtaining a close and fine surface upon the new goods.

**Mungo** (c. 518-603). Scottish saint, also known as S. Kentigern (q.v.). The name Mungo is formed from two Gaelic words meaning "dear one."

**Muni, PAUL** (b. 1895). An Austrian-born American film actor. Born Sept. 22, 1895, of Jewish parents at Lwow (then Lemberg, Austria), he went to the U.S.A. as a child, was educated in Chicago, and performed at the Yiddish Theatre, N.Y., 1908. A member of the Jewish art theatre company, he toured the country on the Yiddish stage until 1926. Entering films in 1929, he proved to be a great character actor. He was a gangster in *Scarface*, 1932; impersonated Pasteur, 1936, and Zola, 1938; and played a Chinese in *The Good Earth*, 1938. He appeared on the London stage in the leading role in *Death of a Salesman*, 1949.

**Munich** (Ger. *München*). Capital of Bavaria, generally reckoned to rank as Germany's third largest city. It stands on the river Isar, at a height of 1,700 ft. (and is thus the highest large city in Germany) on a plateau adjoining the Alps; its climate, owing to its location, is very variable. Munich, the centre of communications not merely for Bavaria, but for the lines Berlin-Rome, Paris-Istanbul, etc., has a number of stations and an important aerodrome; and is one of the most important centres

of German industry, art, and literature. Before the Second Great War, Munich university was second only to that of Berlin. In the main a modern town with wide, regular streets, beautiful gardens and squares, Munich preserved many remarkable buildings and monuments, e.g. old gates like the Karlstor and the Isartor, S. Peter's basilica (begun 1181), the cathedral of Our Lady (1468-88) with its curious, cupola-crowned twin towers, the Greek church S. Saviour's (1494), S. Cross (1480-85); the old town hall (1470, renovated), the old armoury, later a museum (1500); the great palace, 16th to 19th century; the Antiquarium, the Grottenhof, the Treasury, the Royal theatre (1750-56), the Preysing palace (1723-28), the Jesuit church of S. Michel (1583-97). Most of these, as well as numerous Renaissance and Baroque piles, were laid in ashes by Allied air raids during the Second Great War.

The New and the Old Pinakothek and the Glyptothek contained masterpieces by Rembrandt, Dürer, Titian, Raphael, Rubens, Holbein; famous antique sculptures; the best of the modern and 19th century schools of art. The Schackgalerie displayed all outstanding 19th century masters, from Spitzweg to Boecklin; the National museum held medieval treasures; and the huge German museum, completed only between the two wars, showed the development of technique and mechanics. There were scores of other art and art-craft collections, and a world famous art school; Germany's second biggest library with 1½ million vols., including 50,000 manuscripts; a national and a number of other outstanding theatres. Besides the university and the technical university (together 430 teachers, 13,000-14,000 students) there were academies of music and of art and many other scientific institutes and learned societies. The supreme finance court of the Reich and other authorities were located at Munich, as well as the Bavarian government, the seat of an archbishop and of a papal nuncio.

Schwabing, a suburb, is mentioned in the 8th century; Munich itself, whose name derives from a monks' settlement, became a largish village c. 1158 A.D. under Henry the Lion. It was a flourishing town in the 15th century, was a seat of the arts in the 16th, a centre of tourism in the 18th, and a trade and industrial centre in the



Munich arms  
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19th century. Brewing, building, printing industries were first; followed by locomotive and motor engineering, textile and furniture making, electric and optical industries, and the famous Nymphenburg porcelain manufactory.

Munich's face was altered considerably when Hitler turned it into the Nazi party h.q. in 1931; but few of the huge, dull buildings he erected survived the Second Great War.

Munich became important first as the centre of the salt trade of the neighbouring salt mines of Reichenhall, Hallein, and Berchtesgaden; its city rights were confirmed 1294, and the emperor Louis the Bavarian (1314-47) gave it many privileges. Italian and other artists came, galleries were created under Albrecht V (1550-79), the academy of science was founded 1759, that of art 1809; but it was King Louis I (1825-48) who secured Munich's reputation as the city of art, "Isar-Athens," and Louis II (1864-86), Richard Wagner's Maecenas, who joined music and the theatre to its embellishments. Here, Nov. 8, 1918, the first republic was proclaimed in Germany, and on April 7, 1919, a short-lived Soviet republic; here, Nov. 8-9, 1923, Hitler tried his first "putsch." It was one of the centres of the 1944 July Plot (*q.v.*).

Munich was captured April 29-30, 1945, by the U.S. 7th army, and after the surrender of Germany

Great Britain and France, Czecho-Slovakia had agreed on Sept. 21, and provided that Czech evacuation and German occupation of the area should take place between Oct. 1 and Oct. 10 in stages in accordance with markings on a map attached to the agreement; and that conditions governing the evacuation should be laid down by an international commission composed of representatives of Germany, the U.K., France, Italy, and Czecho-Slovakia, which commission should also ascertain what further areas were of predominating German character, and should determine the final frontiers between Germany and Czecho-Slovakia. With the occupation of Bohemia and Moravia by Nazi forces, March 15, 1939, the agreement became a dead letter. See Czecho-Slovakia.

**Munich Crisis.** Popular name in Great Britain for the situation of international tension in Sept., 1938. The agreement which eased it was signed at Munich, hence this name. International tension had been growing since Hitler's re-occupation of the Rhineland in 1936, and after he occupied Austria, March, 1938, it became alarm. Czecho-Slovakia, where the German-speaking inhabitants of the Sudeten area had for some time been agitating for autonomy under the Nazi-inspired leadership of Henlein, appeared to be next on the list of victims.

ginning of Aug., Lord Runciman was sent to Prague by the British govt. as an "unofficial adviser" to the Czech govt. on the Sudeten German question; but in Sept. rioting broke out in the Sudeten area, Henlein demanding its inclusion in the Reich. His party was suspended by the Czech govt. and he himself fled to Germany.

In this situation, Chamberlain (*q.v.*), the British prime minister, believing that war was all but inevitable, flew to Berchtesgaden on Sept. 15 to see Hitler. On his return, Daladier, the French premier, and Bonnet, the French foreign minister, flew to London. Under the joint pressure of France and the U.K., Czecho-Slovakia agreed to the cession to the Reich without plebiscite of areas including more than 50 p.c. Sudeten Germans, and the neutralisation of the rest of the country. Chamberlain flew to Godesberg, Sept. 22, for a second meeting with Hitler, who now insisted on the handing over by Oct. 1 of considerable areas shown on a map he presented. Back in London, Chamberlain again met Daladier and Bonnet.

Meanwhile President Benes had ordered a general mobilisation of the Czech army at 10 p.m. on Sept. 23. By midnight on the 24th France had more than a million men under arms; the British home fleet had left Invergordon for an unknown destination and the Mediterranean fleet was concentrating at Alexandria. In a speech made before 30,000 people in Berlin, and broadcast, Hitler on Sept. 26 attacked Czecho-Slovakia and Benes violently, announcing that his patience was nearing its end, but insisted that if this question were settled according to his demands there would be no more international problems.

In the U.K., distribution of gas masks to the people began on Sept. 25; parliament, which was in recess, was summoned to meet on the 28th. A.A. and coastal defence units of the Territorial army, the Observer Corps, and defensive units of the Auxiliary Air Force were called up on the 26th; and the War office announced the formation of a women's service, the Auxiliary Territorial Service. Chamberlain broadcast to the nation on the evening of Sept. 27, and in London trenches were being dug in the parks to serve as rough air raid shelters. The fleet was mobilised on Sept. 28, on which day Chamberlain gave the commons an account of his negotiations. While reporting that he had that



Munich, Bavaria. View of the city taken in 1945, showing some of the damage sustained in air raids during the Second Great War

a few days later came within the U.S. zone of occupation. It became the capital of the *Land* of Bavaria, set up by the Americans Sept. 27. Pop. (1945) 865,500.

**Munich Agreement.** Agreement signed at Munich, Sept. 30, 1938, by Germany, Great Britain, France, and Italy. It confirmed the cession by Czecho-Slovakia to Germany of the Sudeten German area to which, under pressure by

France already in 1937 had assured Czecho-Slovakia that she would stand by their treaty of 1924 if Czecho-Slovakia were attacked; she repeated the assurance in March, 1938, when the Soviet government also gave her a pledge of immediate assistance in case of attack, and the German government assured her of its determination to respect her integrity. But tension still grew. At the be-

morning telegraphed to Mussolini asking him to intervene, a message was handed to him: it was an invitation from Hitler to Chamberlain and Daladier to meet himself and Mussolini at Munich the next day. At this meeting, to which no Czech representative was admitted, the dismemberment of Czecho-Slovakia in accordance with Hitler's demands was confirmed. On his return Chamberlain was wildly acclaimed. He brought with him a document signed by Hitler and himself in which each agreed that any differences between their two countries should be resolved by peaceful means. Before cheering crowds in Downing Street, Chamberlain claimed that he had brought back "peace with honour," adding: "I believe it is peace for our time." See Munich Agreement.

**Municipal Bank.** The only bank owned by a municipality in England is that of Birmingham, established in 1916 largely by the efforts of Neville Chamberlain, then lord mayor. It has for objects the receipt of deposits and their use primarily as loans to depositors for the purchase of dwelling houses and land in Birmingham. The bank is managed by a committee appointed annually by the city corporation. With certain exceptions, it restricts the amount of money which may be deposited annually, and withdrawn at any one time, by the depositors, to whom it allows interest. In 1946 the amount standing to the credit of depositors was £74,281,359, more than half in government securities.

**Municipal Corporations Act.** Measure passed by the parliament of the U.K. in 1835 for reforming the municipal corporations of England and Wales. Until then the boroughs were governed in a great variety of ways, and the corporations were frequently corrupt and never democratic. The Act provided a uniform constitution for all boroughs, which were

to have a council composed of mayor, aldermen, and councillors. Another Municipal Corporations Act followed in 1882. To look after



**Munich Crisis.** Neville Chamberlain acclaimed at Downing Street on his return from Munich, September 30, 1938, when he "believed that he had brought back 'peace for our time'."

the interests of these bodies there is in London an Association of Municipal Corporations.

**Municipal Election.** Election of the members of a borough (or burgh) council in the U.K. Councillors are chosen for three years, but one-third of the council retires annually, so that municipal elections occur every year. The mayor and aldermen are elected by the councillors, the former for one and the latter for six years. Regulations for municipal elections are laid down in the Municipal Corporations Act of 1882, as subsequently amended. By the Representation of the People Act, 1945, the franchise, previously confined to owners or tenants of premises, was extended to all those qualified to vote in parliamentary elections. See Borough; Election; Local Government.

**Municipality.** Word derived from the Latin *municipium*. a term which was applied to urban communities subject to Rome, whose members were liable to all the burdens of Roman citizenship and enjoyed the more important of its privileges. These privileges included a large measure of local autonomy. At the present day the word is used to connote any corporate city or town organized for self-government. See Borough.

**Municipal Trading.** Term to denote the provision by a local authority of a service or commodity for which a direct charge is made. Commoner forms of municipal trading are the supply of water, gas, electricity, tram and bus services, markets, baths and swimming baths, cemeteries, housing, and meals (in civic restaurants, canteens, etc.). A trading element may enter into the collection and disposal of refuse and salvage, maternity hospitals and other medical services, smallholdings, private street works, parks and places of recreation. Some local authorities own harbours, docks, piers, canals, quays, and ferries. Birmingham has a Municipal bank (*q.v.*).

Since 1900 there has been a great growth in municipal trading, partly as an expression of civic spirit—as an alternative to the control of private utility supply companies—to meet needs not met by private enterprise; and partly as a result of two wars. Some municipalities protested strongly against the complete substitution of regional or national control for municipal control of undertakings concerned with electricity, gas, and transport. Housing and Town Planning Acts have increased the opportunities for municipal trading in building materials, domestic fittings, etc.

Proposed extensions of municipal trading are a frequent cause of acute controversy. In their favour it is argued that the local authority can divert to public use profits that would otherwise accrue to monopolists; that prices can be reduced and services improved; that public health can be advanced. Those opposing municipal trading claim that it is seldom so efficient as private enterprise since it lacks the spur of competition; that it creates opportunities for corruption; that it generally increases rates.

In 1942-43 the receipts of local authorities in England and Wales from trading services and the corresponding expenditure (given in brackets) were as follows (in £ millions): cemeteries, 1.4 (2.2); water, 25.6 (27.4); gas, 26.3 (26.1); electricity, 76.2 (76.3); transport, 34.3 (33.1); harbours, docks, piers, canals, and quays, 13.3 (15.0); other trading services, 12.1 (12.8). Expenditure includes contributions to sinking funds for the repayment of capital.

**Muni River Settlements** OR RIO MUNI. Mainland portion of the colony of Spanish Guinea (*q.v.*).



**Munitions** (Lat. *munire*, to fortify). Term originally applied to the projectiles discharged from firearms, as distinct from armaments, which referred to the actual weapons. In modern warfare, however, the term munitions covers all warlike equipment and stores except clothing and food.

Until the First Great War each of the fighting services of Great Britain was responsible for the supply of its own munition requirements and the development and production of new weapons, most of the demands being met through the royal ordnance factories. But when the war began, the method of supplying munitions proved inadequate to arming and equipping the increasing numbers of men being absorbed into the army. Munition factories were dependent upon Germany for many essential components and materials, including sulphuric acid and toluol, which were essential in the manufacture of high explosives.

During the campaign of 1914-15, the British c.-in.-c. repeatedly complained that his artillery ammunition was so scarce that guns had to be rationed to four rounds a day, while the infantry were obliged to make their own hand-grenades from empty jam and meat tins. At that time, munition plants were working at half-pressure, few were running night shifts, and trade union regulations hampered production. There was a lack of coordination between the munition demands of the navy and army, and these services frequently overlapped each other in the placing of contracts for even the same type of article.

Despite the complaints of commanders in the field, the govt. emphatically denied any shortage, and on April 20, 1915, Asquith, the prime minister, quoting Lord Kitchener, minister for War, dismissed the criticisms as mischievous. On May 14, 1915, the military correspondent of *The Times* stated that British operations at Festubert had failed because of the lack of suitable ammunition for reducing German strongpoints. A week later an article in the *Daily Mail* accused Kitchener of starving the army of high explosive shells. Although these articles aroused some resentment, it was difficult to deny the allegations, and on June 9, 1915, the govt. established a Ministry of Munitions to expedite and control production of munitions of war for army and navy. Lloyd George resigned office as chancellor of the exchequer to

organize the new department, and within a few months the ministry was turning out war material on an increasing scale. Strikes and lock-outs were forbidden, and profits limited. Munition towns were built at Gretna and elsewhere, and by the end of the war 2,300,000 men and 900,000 women were employed on munitions. The total expenditure of the ministry from its inception until 1920, when it was succeeded by a disposals board, was £2,019,507,941. The ministry was also responsible for the development of new equipment, and designed special devices for specific military requirements.

In Aug., 1939, the British govt., seeking to avoid repetition of the 1914-15 munition problem in any future war, set up a ministry of



Sir Alfred Munnings, P.R.A., 1944-49. This distinguished painter of horses at work in his studio. The canvas portrays the start of a race at Newmarket

Supply to direct and coordinate production of all war materials for the army. The navy and R.A.F. were not at first within its purview. It was given wide powers over labour and materials. Eventually the ministries of Supply and of Aircraft Production became responsible for the development, production, and distribution of munitions, equipment, and clothing to the army, navy, and R.A.F. In 1943, the peak period of production, 4,250,000 men and women were engaged on munitions. After the war the ministry of Aircraft Production was merged into that of Supply, which continued to function as a purchasing agency for the government rehabilitation schemes. See Supply, Ministry of.

**Munkacsy, MICHAEL** (1844-1900). Hungarian painter. Born at Munkacsy, Feb. 20, 1844, he was really named Lieb. After a youth spent in poverty he studied at the art society in Pest and made his way to Vienna, Munich, and Düssel-

dorf where he painted the *Last Days of a Condemned Prisoner*. In 1872 he settled in Paris, where his *Milton Dictating Paradise Lost* won a medal in 1878. After a brilliant career he became insane and died at Enderich, Germany, May 1, 1900. He is best known by his immense religious pictures, *Christ Before Pilate*, and *The Crucifixion*, sold for more than £30,000 each, and *Ecce Homo*. *The Apotheosis of the Renaissance* was painted for the ceiling of the Austrian art historical museum, 1884. *Pron. Moonkachy*.

**Munku Sardyk**. Sacred mountain of Central Asia. On the borders of Outer Mongolia, Tannu-Tuva, and the Buriat-Mongol republic of Russia, it is 7 m. N. of Kossogol, and from its glaciers rise the Oka, Irkut, and Ulu-kem, one of the head-streams of the Yenisei. It was first ascended by Radde in 1859. Graphite is found near. Alt. 11,450 ft.

**Munnings, SIR ALFRED JOHN** (b. 1878). British painter. Born at Mendham, Suffolk, Oct. 8, 1878, he studied art at Norwich and Paris. He early made a reputation as a painter of horses, first exhibiting at Burlington House in 1898, and rendered scenes of race meetings, e.g. *Epsom Downs, Derby Week*, also of hunts and gipsy life. In the Tate Gallery are his *City and Suburban Day: From My Bedroom Window*; *Their Majesties Return from Ascot*. Elected A.R.A. 1919 and R.A. 1925, he was a stubborn opponent of modern art. He was president of the R.A. 1944-49 and was knighted 1944.

**Munro, HECTOR HUGO** (1870-1916). British writer, especially of short stories, under the pseudonym Saki. Born in Burma, he was at school at Exmouth and Bedford before joining the Burma mounted police. He began about 1890 to write articles as Saki in the *Westminster Gazette*, and political satires, e.g. *The Westminster Alice*. Short stories, many of them models of compression, were collected in several volumes, including *Reginald*, 1904; *Reginald in Russia*; *The Chronicle of Clovis*. They show a mastery of form allied to a biting wit and an outstanding gift of describing the macabre. A novel, *The Unbearable Bassington*, anticipated ten-



Hector H. Munro ("Saki"), British novelist *Hoppé*

dencies of post-war satires. He wrote *The Toys of Peace*, to which a memoir by R. Reynolds was added in 1919; *The Square Egg*, with biography by E. Munro, 1924. Munro, who acted as correspondent in St. Petersburg and Paris 1902-08, served in the First Great War and was killed Nov. 14, 1916, near Beaumont-Hamel.

**Munro, Hugo Andrew Johnstone** (1819-85). British scholar. Born at Elgin, Oct. 19, 1819, he was educated at Shrewsbury and Trinity College, Cambridge. A brilliant classical scholar, he became fellow and lecturer at Trinity and was professor of Latin in the university, 1869-72. He died in Rome, March 30, 1885. Munro's reputation rests on his edition and translation of Lucretius, 1860-64, regarded as one of the finest modern examples of classical scholarship. He also wrote *Criticisms and Elucidations of Catullus*, 1878.

**Munro, Neil** (1864-1930). Scottish novelist, born at Inveraray, June 3, 1864. He became editor of



Neil Munro,  
Scottish novelist

the *Glasgow Evening News* in 1918. He had attracted attention by stories collected as *The Lost Pibroch*, 1896. Many of his tales had a setting in the Western High-

lands; they included *John Splendid*, 1898; *Doom Castle*, 1901; *Fancy Farm*, 1910; *The New Road*, 1914; *Jaunty Jock*, 1918. Munro, who also wrote humorous character studies under the pseudonym of Hugh Foulis, died on December 22, 1930.

**Munro, Sir Thomas** (1761-1827). British soldier and administrator. Born May 27, 1761, the son of a Glasgow

merchant, he entered the service of the East India Company as an infantry cadet in 1780, participating in operations



Sir Thomas Munro,  
British soldier  
After M. A. Shee, R.A.

against Haider Ali. He was engaged in civil administration 1792-99, and then served against Tippeco Sahib. Later he was appointed administrator of Kanara. Returning home in 1807, he went out again to Madras in 1814 on a mission of administrative reform, but his work being inter-

rupted by a fresh Mahratta war he defeated the Peshwa in a brilliant campaign. From 1819 until his death from cholera, July 6, 1827, he was governor of Madras.

**Munsey, Frank Andrew** (1854-1925). American publisher. Born at Mercer, Minn., Aug. 21, 1854, he had some experience as a telegraphist in Augusta, Maine, and then went to New York, where in 1882 he founded *The Golden Argosy*, an 8-page weekly illustrated paper for boys and girls, later known as *The Argosy*. Munsey's Weekly, a periodical for adults started in 1889, became a monthly, *Munsey's Magazine*, in 1891. Owner of *The New York Sun* and *The Baltimore News*, *The All-Story Magazine*, *The Scrap Book*, and other publications, Munsey wrote *Afloat in a Great City*, 1887; *The Boy Broker*, 1888; *A Tragedy of Errors*, 1889; *Under Fire*, 1890; *Derringforth*, 1894. He died Dec. 22, 1925.

**Munster.** One of the four provinces of Eire. It consists of the six counties lying in the S.W. of the country, Clare, Kerry, Cork, Waterford, Tipperary, Limerick. Its area is 9,316½ sq. m., making it the largest province. A mountainous region, it contains some of the wildest and also the most beautiful scenery in Ireland. Munster was one of the old Irish kingdoms, and was at one time divided into Thomond, the N. part, and Desmond, the S. part. Its independent kings existed until the 12th century. In the reign of Elizabeth a president was appointed to govern Munster, which about this time was divided into counties. The name survives, although for purposes of administration those of the cos. and the co. bors. of Cork and Limerick apply. Pop. 923,930. See Eire; Ireland; Thomond.

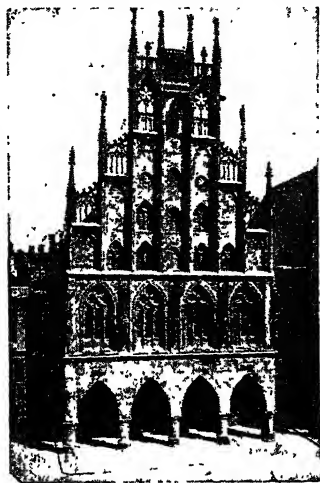


Munster arms

**Munster.** Town of Alsace, France. In Haut-Rhin dept., it stands beneath the Vosges, where two small streams unite, 11 m. W.S.W. of Colmar. It has textile industries, and the buildings include a Romanesque church and a theatre. A Benedictine abbey, founded in the 7th century, was the nucleus of the town, which was made a free imperial city in the 13th century. In the 17th century it passed with Alsace to France; during 1871-1919 it was German. Through the fertile valley of

Munster the river Fecht flows. See Munster Cheese.

**Münster.** Former capital of Westphalia, Germany, now in North Rhine-Westphalia. Until



Münster, Westphalia. The 14th century Town Hall

virtually destroyed in the Second Great War, it was one of the most beautiful specimens of a medieval city, also a leading administrative and economic centre. About 78 m. N.N.E. of Cologne, on the Aa and the Dortmund-Ems canal, it was a rly. and shipping junction, centre of an agricultural area, and seat of a university (founded 1773) and an old bishopric of formerly princely rank. Buildings included the huge cathedral (1165-1265), the churches of S. Lambert (1450), Our Lady (1346), S. Ludgerus (1170), S. Servatius (13th cent.), and S. Martin (1370), the Gothic town hall (1313), scene of the treaty of Westphalia (*q.v.*), 1648, old guild halls, patrician houses of 16th to 18th century origin, and the bishop's palace. Engineering, iron, wire, cement, milling, brewing, and distilling industries flourished, as did the trade in Westphalian hams, sausages, pumpernickel, and hand-woven linen. There were scientific institutes, libraries, museums, academies, a theatre, zoological and botanic gardens, hospitals, etc. Pop. (pre-war) 143,748; (1949) 88,000.

Made a bishopric for the future Saint Ludgerus by Charlemagne in 802, Münster (Lat. *monasterium*) was originally a fortified monastery. It obtained civic rights as a Hanseatic town c. 1250. It saw the Anabaptist "Kingdom of Zion" of John of Leyden. Secularised in

1803, and united with Prussia, except for parts of the bishopric that fell to Hanover and Oldenburg, it became a bishopric again in 1821.

In the Second Great War, the German commander in Münster refused to surrender when requested to do so, April 3, 1945. The town was therefore heavily shelled, and when it fell to the British 2nd army was a blazing ruin. After the German surrender, Münster, in the British occupied zone, was a local h.q. of the control commission.

**Munster, EARL OF.** British title held since 1831 by the Fitzclarence family. The 1st earl was George (1794-1842), natural son of the duke of Clarence, afterwards William IV. His other titles were Viscount Fitzclarence and Baron Tewkesbury. Descendants succeeded until in 1928 the title came to Geoffrey (b. Feb. 17, 1906), 5th earl, who held under-secretaryships of state in the Coalition governments of 1939 and 1943-45.

**Münsterberg, HUGO** (1863-1916). German psychologist. Born June 1, 1863, at Danzig, he was educated there and at Leipzig and Heidelberg. In 1891 he became professor at Freiburg, but in 1892 he settled in America as professor of psychology and director of the psychological laboratory at Harvard. In 1911 he was made director of the American Institute in Berlin, where he died, Dec. 15, 1916. Münsterberg upheld the theory of voluntaristic idealism, according to which the will is the essential principle, as opposed to intellectualism, which regards the intellect as supreme and knowledge as derived from pure reason. A pioneer in industrial psychology, he published in 1914 *Principles of Psychology, and Psychology General and Applied*.

**Munster Cheese.** French cheese taking its name from a town in the Alsatian department of Haut-Rhin. Red-rinded and cylindrical, it is a fermented, whole-milk cheese, made from Nov. to April in the Vosges. Though it has a forbidding odour and is not attractive in appearance, it is popular.

**Munthe, AXEL MARTIN FREDRIK** (1857-1949). Swedish physician and writer. Born at Oskarshamn, Oct. 31, 1857, he attended Uppsala univ. and became a fashionable ladies' doctor in Paris and Rome, amassing a large fortune. He was appointed court physician to the king of Sweden, 1903, and to the queen, 1908. Retiring to Capri, where he built the villa of San Michele, he devoted himself to

writing, *Memories and Vagaries* appearing in 1908. His best-selling autobiography, *The Story of San Michele*, 1929, was trans. into many languages. By his own account he narrowly escaped death from cholera and earthquake, a duel and an avalanche; he was long almost blind and a sufferer from insomnia. In 1946 he presented San Michele to the Swedish archaeological institute in Rome and took up residence in the royal palace at Stockholm, where he died Feb. 11, 1949.

**Muntjac** (*Cervulus*). Species of small deer, found mostly in Indian jungles. The upper canine teeth in



Muntjac. Small Indian deer

the male project beyond the lips like tusks. The antlers grow from pedicles of bone forming prolongations of the frontal bone. The female has neither the tusk-like canines nor antlers.

**Muntz Metal.** Alloy of copper and zinc. It admits of being forged and is much used for sheathing, bolts and nuts, pump rods, and other parts of machinery which are to be exposed to the action of sea water or other influences calculated to corrode iron or steel. It was brought into use by G. F. Muntz of Birmingham in 1832. *See Alloy*; *Brass*.

**Münzer, THOMAS** (1490-1525). German sectarian and revolutionary. A native of Stolberg in the Harz, he joined the reformers, but in 1521 advocated extreme doctrines, and demanded obedience as an inspired prophet. He is sometimes considered the founder of the Anabaptists. Having planned the murder of his opponents at Zwickau, he fled to Prague, and then appeared at Wittenberg, where he found influential support until Luther arrived and restored order. Münzer retired to Allstedt in Thuringia and set up a communistic theocracy. Expelled in 1524, he took a leading part in the Thuringian peasant revolt. His camp at Frankenhäusen was taken by Philip of Hesse and John of Sax-

ony, May 15, 1525, and Münzer was beheaded at Mühlhausen, May 27. *See Anabaptists*; *Peasants' War*; *Reformation*.

**Mur.** River of Austria and Yugoslavia. It rises in the Eastern Alps in Salzburg, Austria, and flows through Styria past Graz, where its valley is a valuable line of communication on the routes to Vienna from the S. and S.W. Below Radkersburg it enters Yugoslavia and joins the Drave, of which it is the principal affluent.

**Murad I OR AMURATH I** (1319-89). Sultan of Turkey. Succeeding his father Orkhan in 1359, he conceived the ambition of establishing his empire in Europe, and, favoured by the disorders in the Balkan countries, began his advance. Capturing Adrianople and defeating the kings of Hungary, 1363, and Serbia, 1366, he established his realm as far as Sofia in 1382. The subjugated princes eventually formed an alliance under Lazar, tsar of Serbia, and marched against the Turks, but were defeated at Kossovo, 1389. Murad did not live to reap the fruits of his victory, being assassinated by a Serbian soon after the battle.

**Murad II** (c. 1403-51). Sultan of Turkey. Son of Mohammed I, he succeeded to the throne in 1421, but a series of unsuccessful wars with the Hungarians under Janos Hunyadi led to the treaty of Szegedin in 1444. By this Murad abandoned his sovereignty over Serbia. He twice abdicated in favour of his son, Mohammed, but each time was recalled to the throne by foreign menace. His campaigns against the Hungarians ended with the victory over Hunyadi at Kossovo, 1448. He died at Adrianople.

**Murad III** (1546-95). Sultan of Turkey. Succeeding his father, Selim II, in 1574, he showed indolence and sensuality that made his reign a continual struggle with the janissaries. The first English ambassador was accredited to the Porte in 1583.

**Murad IV** (1611-40). Sultan of Turkey, who ascended the throne in 1623. His minority was the opportunity for grave disorders throughout his realm, which culminated in an attack on the palace at Constantinople, 1631. Naturally of a stern and imperious character, Murad soon earned a reputation for unparalleled ferocity, putting to death during eight years at least 100,000 persons. After a successful campaign against the Persians in 1638-39, he died of gout due to habitual drunkenness.

**Murad V** (1840-1904). Sultan of Turkey. Born Sept. 21, 1840, the eldest son of Abdul Mejid, his whole life, with the exception of a brief interval, was spent as a prisoner, first of his uncle the usurper, Abdul Aziz, and then of his brother, Abdul Hamid II. In 1876 he was proclaimed sultan on the fall of Abdul Aziz, but after three months he was himself deposed in favour of his brother, whose prisoner he remained until his death, Aug. 29, 1904.

**Muraena.** Genus of large fish, resembling the eel. It occurs mainly in the tropic seas, though *M. helena*, one of the 80 odd species, is found in the Mediterranean. Some of the species are 10 ft. long, and their strong and sharp teeth make them dangerous to fishermen. Most of them are handsomely coloured and marked, and they have been esteemed as table fish since classic times.

**Mural Circle.** In astronomy, name given to an instrument formerly used for measuring the declinations of stars. It consisted of a graduated circle on firm foundations, and carrying a telescope which revolved in the meridian plane. It was superseded by the transit circle (*q.v.*).

**Mural Decoration.** Artistic adornment of wall surfaces with conventional or pictorial designs, either flat or in relief, or with materials decorative in themselves. While mural decoration is subsidiary to architecture, and takes different forms appropriate to the different styles of building, it consists in the application of many other arts, especially painting, sculpture, ceramic, and textile art.

Painting on a flat plaster surface is the most widely diffused method, and is applied, where the climate permits, to exterior as well as interior decoration. Tempera and fresco were generally used by the ancients. The Egyptians employed brilliant and somewhat crude colours. The Cretans decorated their palaces with delicate naturalistic frescoes from 2000 to 1400 B.C. In the classical age of Greece, colour was freely applied to walls, but our knowledge of ancient mural painting is mainly derived from derivative or late styles, Etruscan and Roman, especially the art of Pompeii. Gothic architecture, though providing relatively little flat wall surface, was accompanied by a revival of wall-painting, greatly developed at the Renaissance. Modern attempts at the revival of fresco painting have been sporadic, and not very fortunate.

The use of sculpture for mural

decoration dates from remote antiquity. The Egyptians covered their walls with painted bas-reliefs, often countersunk. The alabaster carvings in very low relief in Assyrian palaces are marvels of technique. In Greece reliefs were sparingly used, chiefly in friezes. Late Gothic employs diaper patterns, and the walls of Muslim buildings are often adorned with sculptured arabesques.

A frequent method in all ages from the Aegean civilization of Crete, through the classical, Mahomedan, and Renaissance styles, has been the application of stucco, gesso, or other kinds of plaster, to form designs in relief on a flat surface. It is often combined with painting and gilding. The Alhambra and other Moorish buildings owe much of their beauty to coloured stucco.

From the glazed brick of ancient Persia was ultimately derived the magnificent Oriental art of covering walls with moulded and enamelled tiles, in which geometrical designs, flower patterns, and Arabic texts are employed. In the Renaissance age, Italian faience and terra cotta were extensively used in mural decoration.

Woven hangings were used from early times, but tapestry is a characteristic art of the Renaissance. Rich effects were produced in the 16th and 17th centuries by stamped leather, silvered and covered with yellow varnish. Painted and printed cloth were cheap substitutes for tapestry. Oak panelling, often richly carved with foliage and fruit, was frequent in Tudor and Stuart England. Wallpaper gradually came into use in the 18th century, and was raised to a fine art by William Morris and others a century later. See Encaustic; Faience; Fresco; Gesso; Glaze; Mosaic; Painting; Panelling; Plaster; Rococo; Sculpture; Sgraffito; Stucco; Tapestry; Tempera; Terra Cotta; Tiles; Wallpaper; Wood-carving.

**Murano.** Island and town in the Venetian lagoon, Italy. It is  $1\frac{1}{2}$  m. N.E. of Venice, forming a suburb of that city. The island, 5 m. in circuit, once thickly populated and possessing its own mint, is now largely occupied by vineyards. It has a cathedral dating from about 970, since rebuilt and

restored, and other churches with valuable pictures. The museum is rich in examples of glass-work, for which Murano has been celebrated from the 13th century. Introduced by Byzantine glass-workers during the Crusades, the industry declined during the 18th century, but was revived in the 19th. Pop. 5,800.

**Murat, JOACHIM, KING OF NAPLES** (1767-1815). French soldier. Born March 25, 1767, at



*(Signature)*  
After Gérard

La Bastide, S. France, the son of an innkeeper, in 1787 he enlisted in a cavalry regiment, and obtained a commission in 1792. Three years later he attracted the attention of Napoleon, and accompanied him to Italy, where in recognition of his services he was made general. Accompanying Napoleon to Egypt, he distinguished himself at the battle of the Pyramids, 1798, and was given command of the cavalry in the Syrian campaign, being largely responsible for the victory of



Murano, Italy. Rio dei Vetrai, the principal canal of the Venetian island

Abukir. Returning to France, he was active in promoting the consulate, and in 1800 married Caroline Bonaparte, the consul's youngest sister. He crossed the Alps with Napoleon, fought at Marengo, was given command of the army of Italy, and drove the Neapolitans from the papal states. In 1803 he was made governor of Paris.

Upon the establishment of the empire, Murat was made prince, marshal, and grand admiral of France. The campaign of 1805 found him in command of the cavalry, and as a reward for a series of successes, culminating at Austerlitz, he was in 1806 made grand duke of Berg. Later in the year he took up his old command, and fought with distinction at Jena, Hohenlinden, Eylau, and Friedland. In 1808 he was sent to Spain as lieutenant-general of the emperor, but after two months, upon Joseph Bonaparte becoming king of Spain, Murat was made king of Naples, under the name of Joachim Napoleon. The position was intolerable and led to serious differences with the emperor. The war with Russia, however, brought Murat to Napoleon's side, and he was given command of the cavalry in the campaign of 1812. When Napoleon hastened back to Paris, he left Murat in command of the retreating army.

Murat's fears for his throne were increased after the Leipzig campaign, and he hurried to Naples and entered into negotiations with Austria. Allying himself to that empire, he attacked the French in N. Italy, but on Napoleon's escape from Elba, he offered his services to his old master, and declared war on Austria. His army was routed, and he fled to Naples, and thence to Cannes, where he organized an expedition against the Bourbons who had been reinstated in Naples. With 200 men he landed in Calabria, at Pizzo, was taken prisoner, tried on the spot by court martial, and on Oct. 13, 1815, was shot in the courtyard of the castle. Thoroughly unreliable as a subordinate, Murat ranks among the great cavalry leaders. *Consult* Life, A. H. Atteridge, 1911.

**Muratori, Lodovico Antonio** (1672-1750). Italian scholar. Born near Modena, Oct. 21, 1672, he became librarian at Milan, and in 1700 was appointed librarian and archivist to the duke of Modena. Nearly 50 volumes of Italian historical materials which he collected and edited are his imperishable monument; they include *Rerum Italicarum Scriptores*, 1723-51;

*Antiquitates Italicae Medii Aevi*, 1738-42; and *Annali d'Italia*, 1744-49, the second book of which contains the 2nd century canon of the N.T. books known as the Muratorian Fragment. The "father of Italian history" died at Modena, Jan. 23, 1750.



Murcia, Spain. Cathedral tower, completed in 1766, with, left, the 16th century Chapel of los Velez

**Murchison.** Geographical name in Western Australia. It is that of (1) A river which rises in the Carnarvon Range and flows S.W. to Gantheaume Bay. (2) A goldfield E. and S.E. of the Sanford, a left bank affluent of the Murchison. Cue, its capital, is connected by rly. with Geraldton. (3) A mt. of 1,705 ft., in the Scrubby Range, E. of the Middle Murchison. (4) A co. with a coastline at the S. end of Shark Bay, and the river Murchison as its E. boundary.

**Murchison, Sir Roderick Imrey** (1792-1871). British geologist. Born at Tarradale, Ross-shire, Feb. 19, 1792, he was educated at the military college at Great Marlow, and, entering the army, served in the Peninsula War. In 1826 he was elected F.R.S. and in 1828 he toured Auvergne and N. Italy with Sir Charles Lyell, and afterwards carried out geological tours in the U.K. and on the Continent. He reclassified the Palaeozoic rocks and in 1835 suggested the name Silurian for the system first noticed in Wales and later found to be world-wide. In 1838 he published his famous work *The Silurian System*. In 1855 he was appointed director-general of geological survey, and he was president of the Geographical Society many years. He was knighted in 1846, made K.C.B. in 1863, and a baronet in 1866. He died Oct. 22,

1871. *See* Silurian; *consult* Life, Sir A. Geikie, 1875.

**Murchison Falls.** Waterfall on the White Nile. It is 50 m. below Foweira, where the river drops in three cascades to Lake Albert.

**Murcia.** Maritime prov. of S.E. Spain. Between Alicante and Almeria, on the Mediterranean Sea, its area is 4,369 sq. m. It slopes from the mountains in the N.W. which rise in the Sierra de Espuña to an alt. of 5,150 ft., down to the sea. In the coast land to the E. is a large lagoon, called the Mar Menor. Well watered by the Segura and its tributaries, Murcia is fertile, especially in the Huerta de Murcia, where irrigation is practised. The climate is hot and dry; oranges, olives, vines, maize, and other cereals are grown, and mulberry trees cultivated for the rearing of silkworms. The chief towns are Murcia, the capital, and Cartagena. The first Carthaginian possession in Spain, Murcia was occupied in turn by the Romans, the Moors, who made of it a kingdom, and the Spaniards. The old Moorish kingdom, 1223-43, corresponded chiefly with the modern provs. of Murcia and Albacete. Pop. est. 764,120.

**Murcia** (Arab. *Medinat Mursiya*). City of Spain, capital of the prov. of Murcia. It stands on the Segura river, 25 m. W. of the Mediterranean, and 50 m. by rly. N.N.W. of Cartagena. In the centre of the beautiful Huerta (garden) de Murcia, its older parts are crowded, but the new are well built, with fine streets, avenues, and squares. The cathedral, founded probably in 1388, has a Renaissance façade and a tower 480 ft. in height. The bishop's palace is notable, and there is a Moorish granary, now a picture gallery. There is a large trade in fruit. An Iberian town and a Roman colony occupied the site, but the present city was founded by Abd-ur-Rahman II, caliph of Cordova, in 825, afterwards belonged to various Moorish states, and was taken by the Castilians, 1263. It was besieged by the French in 1810 and 1812, and has suffered from inundations and earthquake. The pop. of 221,209 is the seventh largest in Spain.

**Murder.** In English law, the unlawful killing of any human being who is in being and under the king's peace, with malice aforethought, either express or implied. The words "in being" have relation to the slaying of children at the time of birth. Unless the child had a separate existence from its



mother, its death cannot be made the subject of a charge of murder, though since the Infant Life (Preservation) Act, 1929, it may amount to child destruction. "Unlawful" killing means killing without legal justification as is possessed, for example, by a person who slays someone who is trying to kill him; by the public executioner; by a constable who slays a rioter. "Malice aforethought either express or implied" does not necessarily mean actual ill-will. It is rather clumsily said that if there is no lawful excuse for the slaying, or if it was not accidental, or if it was not upon provocation in hot blood, malice will be implied.

Further, there is what is sometimes popularly called "constructive murder," which happens when a man who had no intention to kill does kill when he is in process of doing another felonious act. A burglar who, being interrupted, strikes a blow likely to cause death is guilty of murder if the interrupter dies. Death must take place within a year and a day of the wounding for a murder charge to be brought in England. With certain exceptions the body must be found in a case of murder before the accused can be tried. By English law the judge who tries an alleged murderer must, if there is a conviction, pronounce sentence of death. Sufficient provocation will reduce murder to manslaughter. See N.V.; also Homicide; Manslaughter; Matron; *consul* Just Murder. E. Robinson, 1947.

**Murdock**, WILLIAM (1754-1839). Scottish inventor. Born at Bellow Mill, Ayrshire, Aug. 21, 1754, he became an assistant to James Watt, 1777, carrying out many of the latter's engineering schemes. In 1792 he turned his attention to the possibility of using coal-gas or the gases from the distillation of wood, peat, etc., for illuminating purposes. He erected an experimental plant in 1792, and six years later lit the Soho factory of Watt by gas, the first public use of the new illuminant. Murdock died Nov. 15, 1839.

**Murexide** or ACID AMMONIUM PURPURATE. Substance which crystallises in prisms, showing a beautiful metallic green lustre. It was formerly used in dyeing, but has now been replaced by aniline colours. Murexide was formerly made in large quantities from guano, and can be made by acting on a solution of alloxan and alloxantin by means of ammonia. Also known as Roman purple, it was similar to the Tyrian purple of the

ancients. The latter dye was obtained from a genus of gastropods, *Murex*, hence the name.

**Murger**, HENRI (1822-61). French novelist. Born in Paris, March 24, 1822, he was of German



Henri Murger. French novelist, author of *Scènes de la Vie de Bohème*  
From a sketch by Gavarni

origin. In his youth he passed from one occupation to another, including journalism, until he became famous in 1848 with *Scènes de la Vie de Bohème*. This describes with rich humour and poignant pathos the literary and artistic underworld of Paris, in which much of Murger's life was spent. He contributed to the *Revue des Deux Mondes* and wrote other novels, including *Les Buveurs d'Eau* and *Le Sabot Rouge*, also poems and plays. *Vie de Bohème* was dramatised with success, and was the basis of Puccini's opera *La Bohème*. Murger died Jan. 28, 1861. *Consult* Lives, A. Delvau, 1866; R. d'Héricault, 1896.

**Murghab**. River of Central Asia. It rises in Afghanistan, enters Russian territory (Turkmen S.S.R.), and, after flowing through the oases of Penjdeh and Merv, loses itself in the sandy desert of Kara-Kum. Its length is about 400 m. It is crossed by a branch of the Central Asiatic rly.

**Muridae**. Zoological name for the mouse family of the order of rodents. It includes rats, mice, voles, hamsters, lemmings, and certain others. They are distributed all over the world, and most have naked, scaly tails. Most live on land, though a few are aquatic in habit. See *Hamster*; *Lemming*; *Mouse*; *Rat*; *Rodent*; *Vole*.

**Murillo**, BARTOLOMÉ ESTEBAN (1617-82). Spanish painter. Born at Seville, probably Dec. 31, 1617, he was related to the painter Juan del Castillo, to whose care and instruction he was committed. On Castillo's removal to Cadiz, Murillo

was compelled to join the street artists who hawked their wares in Seville. In 1642 he obtained money by selling coarsely executed but popular subjects to the merchants who exported these goods to Spanish America, and took the road to Madrid, where he was kindly received by Velazquez.

Having returned to Seville, Murillo was commissioned by the friars of the Franciscan convent to paint a series of 11 pictures for their cloister, and began this work in 1646. The payment was beggarly, but the paintings brought fame and commissions. In 1648 he married a rich and noble wife, Doña Beatriz de Cabrera y Sotomayor. In 1654, on the death of Pacheco, he was acknowledged head of the Sevillian school. A series of paintings esteemed among his most celebrated works was begun in 1671 for the church of the Hospital of La Caridad; and three years later he began a famous series for the Franciscan convent outside Seville. These included the *Charity* of S. Thomas of Villanueva, which he was wont to speak of as "his picture." He died at Seville, April 3, 1682.

Murillo excelled in genre, and his realistic scenes from low life are preferred by many to his religious pictures, which are sometimes spoilt by false sentiment and lack of dignity. In the sack of Seville, Marshal Soult carried off a number of Murillo's works, several of which remain in France. There are examples in the London National Gallery, the Dulwich Gallery, and the Wallace Collection. See *illus. Andrew*; *Annunciation*; *Dice*.

**Murmansk**. Arctic city and seaport of the U.S.S.R. On the Kola inlet of the Murman coast, it owes its development to the Murman rly., which directly links it with Leningrad. Projected in 1895, construction of the rly. began in 1915 simultaneously from Murmansk S. and from Zoanka N., the line being completed in 1917. Murmansk harbour is ice-free throughout the year, and the town has a fishing industry and a trade in fish products. Pop. 117,054.

It was the base for Allied troops operating against the Bolsheviks in 1918-19 (see *Murmansk Ex-*



Murillo, Spanish painter  
Self-portrait in Earl Spencer's Collection

pedition), and was later developed by the Russians as the principal base for their Arctic fleet. During the Russo-Finnish war of 1939-40 it was the base for the Soviet attack on the Finnish nickel port of Petsamo. On Dec. 29, 1939, the rly. was cut by Finnish commandos. After the peace treaty Finland was obliged to assist in constructing a rly. through Markajarvi to link up with the Lenin-grad-Murmansk line at Kandalaksha on the White Sea. When Finland joined Germany in the war against Russia, Murmansk became an important objective of the Nazis, who on July 1, 1941, launched a heavy air and land attack against the port and occupied the outskirts. They were driven out by a Soviet counter-attack, and on Sept. 23 suffered heavy losses in another attempt to capture the port. Soviet naval forces based on Murmansk constantly attacked supply ships and transports attempting to maintain the German army. Murmansk was a terminal port for convoys bringing munitions from Great Britain and the U.S.A. From this base Soviet forces advanced into N. Finland and took Petsamo from the Germans on Oct. 15, 1944.

**Murmansk Expedition.** Allied enterprise arising out of the First Great War. In 1918 this region was menaced by Finland, then a vassal of Germany. She had already bargained with the Bolsheviks of Russia for a considerable enlargement of territory.

In Feb.-March, 1918, the British effected a naval landing at Murmansk, and at Pechenga (Petsamo), 100 m. farther W. and close to the Finnish frontier. In June British, French, and U.S. troops occupied the port and adjacent country. The Murman regional soviet at the outset not only offered no opposition, but co-operated with the Allies for the defence of the rly. and territory. On their side, the Allies agreed to recognize the local soviet as the supreme authority, and undertook not to interfere politically. An agreement with the local soviet was ratified July 7, but two weeks later the central Bolshevik govt. countermanded the agreement. In Sept. the Allies pushed down the Murmansk rly., Kandalaksha becoming their base in Oct., and from that centre, in cooperation with the Karelians, they cleared N. Karelia of Bolsheviks and "White" Finns; later in the same month, having advanced S., and occupied Kem, they dislodged the enemy

from the rest of Karelia. By the end of Jan., 1919, the Allies had advanced along the rly. S.W. of the White Sea, and early in March occupied Segeja, about 360 m. S. of Murmansk. The advance continued throughout the summer, the Allies reaching Lake Onega, over 400 m. S. of Murmansk. But by Sept. evacuation of the Murmansk and Archangel areas had begun, and this led at the end of the month to a Bolshevik offensive up the rly. The British troops left the area towards the end of 1919. See Archangel, Expedition to.

**Murner, THOMAS (1475-1537).** German satirist. He was born at Oberehnheim, Alsace, Dec. 24, 1475, became a Franciscan monk, and afterwards wandered from one university to another. His satire, of the most virulent kind, whether spoken or written, was largely directed against the upholders of the Reformation, although he wrote much himself of the need for reform within the Church.

**Murom.** Town of Gorky region R.S.F.S.R. It is 75 m. S.E. of Vladimir, on the Oka and the Kovrov-Murom rly. There is a trade in cereals, metals, timber, sugar, tea, and salt. Murom was an important commercial centre in the 10th cent. Pop. 23,000.

**Murphy, WILLIAM PARRY (b. 1892).** An American pathologist. Born at Salem, Oregon, in 1892, he graduated from Harvard university medical school in 1915, and after a number of hospital appointments became instructor in medicine at Harvard university in 1928. While there, and working in conjunction with Dr. George R. Minot, he discovered the liver treatment method for pernicious anaemia, for which he and Dr. Minot shared the Nobel prize for medicine in 1934. He was awarded the Moxon medal of the Royal College of Physicians in 1933. He published a text book of his system of treatment, *Anaemia in Practice*, in 1939.

**Murray.** Principal river of Australia. It rises in the Australian Alps, and flows N.W. along the borders of N.S.W. and Victoria, and in S. Australia passes through the shallow Lake Alexandrina to the Southern Ocean at Encounter Bay. It has a total length of about 1,609 m. and with its tribs. drains 414,253 sq. m. Its affluents include the Murrumbidgee, with the Lachlan, and the Darling (the main trib.). Important for its fisheries, it is navigable in a great part of its extent, but as a waterway the shallowness of its mouth prevents large ships

entering, though it has rly. connexions at various points on its course. Half-a-mile below the inflow of the Mitta-Mitta is the Hume reservoir, one of the largest in the world. The Murray irrigates one of the chief fruit-growing areas of Australia. See Australia in N.V.

**Murray, SIR DAVID (1849-1933).** Scottish painter. Born at Glasgow, Jan. 29, 1849, he painted landscapes extensively throughout Europe. He was elected R.A., 1905, and his brilliantly coloured scenes of English, Scottish, and continental landscapes became popular. He was president of the R.W.S. in 1917, and knighted the following year. He died Nov. 14, 1933.

**Murray, DAVID LESLIE (b. 1888).** British novelist and journalist. Educated at Harrow and Balliol, Oxford, he was a member of the editorial staff of *The Times*, 1920-44, edited *The Times Literary Supplement*, 1938-44, and as dramatic critic contributed regularly to *The Nation* and *Athenaeum*, 1920-23. His novels, for the most part luxuriant historical romances, included *The Bride Adorned*, 1929; *Stardust*, 1931; *Regency*, 1936; *Tale of Three Cities*, 1940; *Enter Three Witches*, 1942; *Folly Bridge*, 1945.

**Murray, (GEORGE) GILBERT (AIMÉ) (b. 1866).** British scholar. He was born in Sydney, N.S.W., Jan. 2, 1866, and, leaving Australia in 1877, was educated at Merchant Taylors' and St. John's College, Oxford. Professor of Greek at Glasgow university, 1889-99, and Oxford university, 1903-36, he was appointed trustee of the British Museum, 1914. From 1928 he was president of the international committee of intellectual co-operation, and chairman of the League of Nations union, 1923-38. He was awarded the O.M. in 1941.

Acclaimed as one of the most brilliant Greek scholars of his day, his fame rests mainly on his translations of Greek poets and dramatists, recognized as among the



D. L. Murray,  
British novelist



Gilbert Murray,  
British scholar

finest ever made. They include Electra, Medea, Iphigenia in Taurus, Bacchae, and Trojan Women of Euripides (acted chiefly at the Court Theatre, London, 1902-7), Oedipus Rex, 1910, and Antigone, 1939, of Sophocles; Agamemnon, 1920, Eumenides, 1925, and Persians, 1939, of Aeschylus. His numerous works on Greek literature included History of Ancient Greek Literature, 1897; Five Stages of Greek Religion, 1915-25; Aristophanes, 1933; Aeschylus, 1940. He also wrote on problems of the twentieth century in such books as The Ordeal of this Generation, 1929.

**Murray, Sir James Augustus Henry** (1837-1915). British lexicographer. Born at Denholm, Rox-



Sir J. A. H. Murray,  
British lexicographer  
Elliot & Fry

burghshire, he was educated at Edinburgh. During 1870-85 he was a master at Mill Hill School, where he conceived the idea of a new English dictionary. Murray undertook the preparation of a dictionary on historical principles, based mainly on the materials collected by the Philological Society. The first volume was published in 1888. The work had been begun at Mill Hill, but from 1885 was carried on at Oxford, where the Clarendon Press undertook its publication. He was knighted in 1908, and died at Oxford, July 26, 1915. The Dictionary was completed 1928. *Consult* Memoir, H. Bradley, 1919.

**Murray, John.** Name of a firm of British publishers. It was established at 32, Fleet Street, London, in 1768, by John Mac Murray (1745-93), a retired lieutenant of the Royal Marines, who, acquiring a bookselling business, dropped his Scottish prefix.

He issued the first two vols. of D'Israeli's *Curiosities of Literature*. His son, John Murray II (1778-1843), was London agent of Constable, had a share in Scott's *Marmion*, started *The Quarterly Review* in 1809, transferred the business in 1812 to 50 and 50a, Albemarle Street, and published for Byron, Borrow, Crabbe, Jane

Austen, and many others. The business was carried on by John Murray III (1808-92), John Murray IV (1851-1928, K.C.V.O., 1926), and John Murray (b. 1884). In 1917 the firm took over Smith, Elder and Co. and The Cornhill Magazine. *Consult* A Publisher and His Friends, S. Smiles, 1891.

**Murray, Sir John** (1841-1914). British biologist. He was born at Coburg, Ontario, March 3, 1841, and was chief naturalist to the Challenger Expedition, 1872-76, and editor of its scientific reports. He was the author of a number of books and memoirs on marine biology, oceanography, and limnology. He died March 16, 1914.

**Murray, Lindley** (1745-1826). American-English grammarian. Born in Pennsylvania, April 22, 1745, he was a successful barrister, and, having amassed a fortune during the revolutionary war, he came to England and settled at Holgate, near York. His English grammar had a large sale throughout Great Britain and the U.S.A. He died Jan. 16, 1826.



Lindley Murray,  
American-English  
grammarian

**Murrayfield.** Scottish Rugby Union football ground, situated outside Edinburgh, opened 1925. Scotland's home international matches are usually played here.

**Murree.** Hill station of Pakistan in the extreme N.E. of Rawalpindi district, W. Punjab. It is reached from Rawalpindi Cantonment by road (39 m.), and is the starting point for Kashmir by the Jhelum valley. It is on a spur of the Himalayas, alt. 7,517 ft.

**Mürren.** Pleasure resort of Switzerland, in the Bernese Oberland. It is perched on a mountain terrace below the Jungfrau, the Breithorn, the Blumli Alp, and the Schilthorn, 3 m. by cable rly. and electric tramway S. of Lauterbrunnen (q.v.). Alt. 5,385 ft.

**Murrey** or **Sanguine** (old Fr. *moré*, mulberry-coloured). In heraldry, deep blood red colour. It is represented in drawing by diagonal lines crossing each other.

**Murrumbidgee.** River of New South Wales. It rises in the Australian Alps, flows N. in its upper course through the Federal Territory to the artificial lake caused by the Burrenjack dam, thence almost due W. to its junction with the

Lachlan, and, later, S.W. to the Murray. Of its total course of 1,350 m., 500 m. are navigable.

**Murry, John Middleton** (b. 1889). British journalist and critic. Born in London, Aug. 6, 1889, he was educated at Christ's Hospital, and Brasenose College, Oxford. He became a journalist, and served on the editorial staff of the Westminster Gazette, 1912-13, reviewed books for The Times Literary Supplement, 1914-18, edited The Athenaeum, 1919-21, and The Adelphi, 1923-30. An ardent pacifist, with highly original views on religious topics, he edited Peace News, 1940-46. One of the foremost literary critics of his day, with a lively and alert style, he published many volumes of criticism, philosophy, and politics. The best-known included *Countries of the Mind*, 1922 (2nd series, 1931); *Keats and Shakespeare*, 1925; *Son of Woman* (a study of his friend D. H. Lawrence, q.v.), 1931; *Blake*, 1933; *The Necessity of Pacifism*, 1937; *Adam and Eve*, 1944. He married Katherine Mansfield (q.v.) in 1913.



John Middleton  
Murry,  
British writer

**Murshidabad.** Dist. and town of W. Bengal, India. In the Presidency div., the dist. forms the N. part of the Ganges delta, where the river, its main channels known locally as the Bhagirathi and Padma, no longer floods and adds silt to the alluvial plain. The area is 2,063 sq. m. Pop. 1,640,530.

The town stands on the Bhagirathi, and was established in 1704 by the nawab Murshid Kali Khan (after whom the town was named) as the capital of Bengal; it declined after 1790, when Lord Cornwallis transferred the seat of administration to Calcutta. Most of the old buildings are in ruins. Centre of the Indian silk industry, Murshidabad makes bandanas, ivory carvings, gold and silver embroidery, etc. Pop. 15,000.

**Murut.** Primitive people of Indonesian stock in Sarawak and N. Borneo, estimated as numbering 250,000. Shortish and wavy-haired, they are coarser, longer-headed, lankier, ruddier, and less Mongolized than other Bornean peoples. Their customs betoken Philippine contact prior to the Kayan immigration. See Dusun.

**Murzuk** OR MOURZOUK. Chief town in Fezzan, Libya, and an important oasis. The city, founded in 1310, was formerly the capital of the Turkish administration of Fezzan. It owes its importance to its position on the chief caravan route from Tripoli to the W. Sudan. Murzuk was the objective of a raid by the Long Range Desert Group

do not as a rule indicate any disease or disorder, although often associated with indigestion, and if disregarded will soon cease to be observed. In one form, however, they may be symptoms of serious disease of the eye.

**Muscarine.** Poisonous alkaloid found in fly agaric (*Amanita muscaria*), and the fungus *A. pantherina*. It has been prepared artificially by the oxidation of choline with nitric acid. The name is also applied to blue aniline dye.

**Muscat, MOSKAT, OR MASKAT.** Capital and port of Oman, S.E. Arabia. It stands on the S. shore of the Gulf of Oman. Among its exports are pearls, dates, and horses, and its imports include

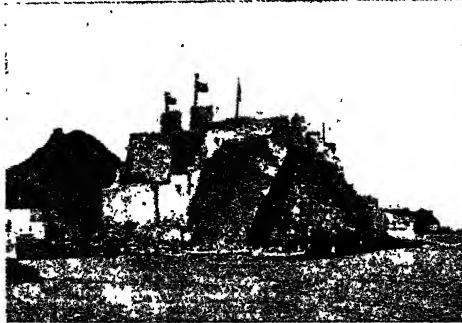
rice, coffee, sugar, silks, and cotton goods, but much of its trade has been lost to Matrah. Muscat is the residence of a British political

**Muscatel** OR MUSCADEL (Ital. *moscado*). Generic term for wine derived from the parent vine of the same name. A highly alcoholised, sweet, rich wine, either white or red, it is distinguished by a strong musk flavour. Muscatel wine is made in S.W. France, N. Spain, Italy, Sicily, Capri, Corfu, Crete, Cyprus, the Canaries, the Cape, Switzerland, and elsewhere. Of the French, the white Rivesaltes and the red Banyuls are fine wines; of the Italian, Lacrima Christi (*q.v.*) is the most favoured.

**Muschelkalk** (Ger., shell lime). In geology, middle subdivision of the Triassic system of rocks. Typically developed in Germany and many parts of the Continent, they are chiefly limestones rich in the remains of mollusca. The formation is an important source of salt, marls, and gypsum. Rocks of this group do not occur in Gt. Britain.

**Muscle.** Tissue possessing power of contraction by which, in the higher animals, movements are performed. Muscles are divided into two main classes: voluntary (or striped) muscles, the action of which is under the control of the will; and involuntary (or unstriped) muscles.

Voluntary muscles are attached to the bones and are sometimes called skeletal. They consist of masses of fibres, each fibre being about 1 in. in length and 1/500th in. in diameter. Under the microscope the fibres are seen to be marked by alternate dark and light markings (the "stripes,") and this form of muscle is in consequence sometimes termed "transversely striated" muscle. Each fibre is



Muscat, S.E. Arabia. The old fort built by the Portuguese during their occupation of the city

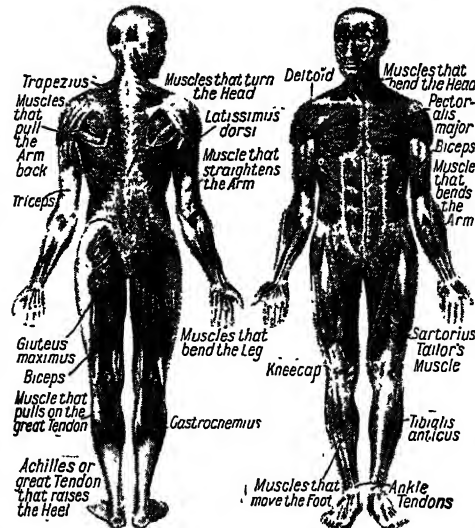
and Free French forces in Jan. 1941, and was captured by Leclerc's forces from the S. in March.

**Musaceae.** Family of monocotyledonous plants, of which the banana is a well-known member. See Banana; Manila Hemp; Plantain; Scitamineae.

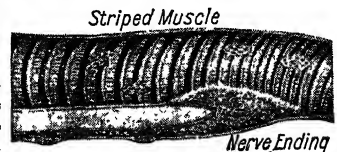
**Musaëus.** Greek poet generally known as the Grammarian. He is supposed to have lived about the 6th century A.D., and was the author of a well-known little epic, *Hero and Leander*. There have been many imitations of this charming poem, notably that of Marlowe, completed and published by Chapman, the translator of Homer.

**Musa Ibn Nosair** (640-716). Arabian soldier and administrator. Born at Mecca, he was employed by the Caliph Walid I to complete the conquest of N. Africa, and by 709 had extended the Arabian empire as far as Morocco. He sent to Spain his lieutenant Tarik, who in 711 secured mastery over a great part of the Iberian peninsula. Tarik was joined in 712 by Musa, who overthrew Roderick, the Gothic king of Spain, but was recalled by Walid 714, having been accused of corruption by Tarik. Deprived of his command and sentenced to a heavy fine, he died on his way to Mecca.

**Muscae Volitantes.** Term applied to little black specks, something like flies, which many people see floating before their eyes. They are the shadows of minute bodies in the vitreous humour. They sometimes give rise to alarm, but



agent and consul. It was occupied by the Portuguese from 1508 to the middle of the 17th century, becoming the capital of an independent state again under a native sultan in 1741. To support the sultan of Oman, British troops were in Muscat in 1915, and took part in defeating the disaffected tribesmen, but these operations had nothing to do with the First Great War. Pop. 4,200. See Oman.



Muscle. Top, diagrams showing back and front views of the distribution of the principal muscles of the body and their mode of action. Below, magnified portion of muscle fibre showing nerve ending

surrounded by a sheath, called the sarcolemma, inside which is soft tissue possessing the power of contraction. When a muscle is stimulated by a nerve and contracts, the fibres become shorter and thicker. In some animals and fishes certain of the muscles are red, this being due to the presence of haemoglobin in their contractile substance.

Involuntary muscles are under the control of a different part of the nervous system, and cannot be made to contract by an effort of the will. This type of muscle forms the muscular tissue of the heart, and is also found in the walls of the oesophagus, stomach, intestines, uterus, bladder, blood-vessels, and other organs. The involuntary muscle of the heart is striated, but the involuntary muscle in other parts does not exhibit striations, and is termed "plain" muscle. It is composed of elongated cells about 1/600th of an in. long, each with an oval nucleus and covered with a delicate sheath. See Anatomy; Biceps; Face; Jaw; etc.

**Muscle Shoals.** Rapids of the Tennessee river in Alabama, U.S.A. They form a 37-m. stretch 260 m. above the confluence of the Tennessee with the Ohio. Until the First Great War the 134-ft. vertical fall, with rapids and pools, acted as a barrier to navigation. In 1916 Wilson authorised construction of two dams and two hydro-electric plants to provide power for making nitrates. Wilson Dam, at Florence, completed 1925, is 4,300 ft. long and has two locks, each 300 ft. by 60 ft. It raised the river's discharge from 5,000 to 500,000 cu. ft., and generates 260,000 h.p. Construction of Pickwick Landing and Wheeler Dams by the T.V.A. helped to provide a 9-ft. channel. In 1933 Wilson Dam became a T.V.A. installation.

**Muscovite.** Common member of the mica group of minerals. It consists essentially of potassium aluminium silicate with water and often some fluorine; traces of caesium and rubidium may be present. The mineral occurs as white flakes, sometimes showing hexagonal crystal form. It possesses a remarkable basal cleavage, which allows it to be split into thin flakes, flexible, elastic, transparent, and with low electrical and thermal conductivity. Muscovite is widespread in granitic and metamorphic rocks; commercial deposits are generally found in pegmatites with flakes up to 12 ft. across. Famous deposits are in Bihar, India. Muscovite is used in electrical products. See Mica.

**Muscovy.** Old name for Russia. Derived from Moscow, it means the district around that city, and was generally used for Russia until well into the 18th century.

**Muscovy Duck** (*Cairina moschata*). Species of duck, occur-



Muscovy Duck. Tree-nesting duck, found naturally in Central and South America.

ring naturally in Central and S. America, but largely introduced elsewhere as an ornamental bird for lakes and parks. The birds live in the forest swamps, where they nest in the trees, and their food is almost entirely vegetable. The colour of the plumage is glossy purplish green on the upper parts, with brownish black crested head, neck, and under parts. The male is much larger than the female.

**Musculo-Spiral Nerve.** One of the main nerves of the arm. It arises from the brachial plexus on the outer side of the armpit, winds round behind the humerus, and passes down to terminate in front of the external condyle of the humerus by dividing into the radial and posterior interosseous nerves. It supplies the triceps and other muscles at the back of the arm, and is also the nerve of sensation to the back of the arm and a considerable area of the forearm. Paralysis of the musculo-spiral nerve produces the condition known as dropped wrist. See Arm; Nervous System.

**Muselier, ÉMILE HENRI** (b. 1882). French sailor. From the naval school at Brest, he served with marines and naval gunners before commanding a Q-boat during the First Great War. He was in charge of naval and coastal defences at Marseilles, 1938-39. Muselier went to Gibraltar in June, 1940, and later joined Gen. De Gaulle in England, being appointed commander of Free French naval forces and a member of the council of defence. He landed on the islands of St. Pierre and Miquelon, off Newfoundland, in Dec., 1941, and dismissed the Vichy governor, the inhabitants declaring for De Gaulle. The officer who chose the cross of Lorraine as symbol of Free France, Muselier was obliged to

resign in 1942 owing to ill-health. *Pron.* Mew-zell-yay.

**Muses** or **MUSAE.** In Greek mythology, the divinities who presided over the liberal arts. They were supposed to be daughters of Zeus, nymphs born in Pieria, at the foot of Mt. Olympus; hence they were sometimes called Pierides. Mt. Helicon in Boeotia and Mt. Parnassus on Phocis were also associated with them. Companions of Apollo, they sang to his lyre.

The muses were at first three in number, and nine in later legend. Their names are: Clio, the muse of history, represented sitting with an open scroll; Euterpe, of lyric poetry, with a flute; Thalia, of comedy and pastoral poetry, with a comic mask and a shepherd's staff; Melpomene, of tragedy, with a tragic mask, the club of Hercules or a sword, and the cothurnus; Terpsichore, of dancing, with lyre and plectrum; Erato, of love songs, with the lyre; Polyhymnia, of sacred song, of pensive appearance; Urania, of astronomy, with a staff, pointing to a globe; Calliope, of epic poetry, with tablet and stylus. The Roman nymphs Camenae or Casmeneae were also identified with the muses.

**Musette.** (1) Musical instrument of the bagpipe class, popular in France in the 17th and 18th centuries. (2) A small hautboy, whose tone resembles that of the melody pipe of the one mentioned above. (3) A pastoral dance in duple or triple time. The suites of the 18th century contain musette airs, alternating with gavottes.

**Museum** (Gr. *mousetion*, the seat of the muses). Repository for the preservation and exhibition of objects of natural history, antiquity, science, and art, also applied to the collection itself.

Museums are comparatively modern institutions, few going back to the 18th century. In classical times museums in the modern sense were unknown, that of Alexandria, founded about 280 B.C., being a university building, although it probably contained collections of all kinds. The extensive collection of objects of art and curiosities is not recorded till after the Renaissance. These early collections were known as cabinets of rare and curious objects, cabinets of medals, etc. Probably the earliest was the collection of natural history objects made by Georg Agricola.

The oldest surviving museum established on a sound basis is the Ashmolean (q.v.) at Oxford Bacon



in his New Atlantis elaborated the idea of a great national museum of science and art. The first great typical collection was the British Museum, founded in 1753. Early museums formed by private individuals were Sir Hans Sloane's museum, now the British Museum; Sir Ashton Lever's, of the late 18th century, probably the largest formed by a single person, afterwards owned by James Parkinson, and finally dispersed by auction in 1806. A number of museums, especially some of the larger and more important, were derived originally from collections formed by princes, nobles, etc.

There are numerous varieties of museums. A very broad difference lies in the bodies maintaining them, and they can be classified as national museums, which are maintained by the state and situated usually in the capital; provincial or municipal museums, maintained out of the rates; museums of a semi-public nature, maintained by universities, societies, and schools; and lastly private museums, maintained by private individuals, and sometimes open to the public, as the King John's House Museum, Rushmore, or the Wellcome Historical Medical Museum, London. Private museums usually tend to become public museums. The sacristies of some foreign cathedrals are often opened as museums, and contain ecclesiastical objects, and sometimes other specimens.

#### Art and Science Collections

Museums may also be classified according to the contents and the ideas underlying their arrangement. They are generally differentiated into art and science museums; examples of the varieties are comparative anatomy (Royal College of Surgeons), botany (Kew), geology (London and Berlin), eastern religions (Guimet, Paris), furniture (Geffrey Museum, London), history of London (London and Guildhall Museums), the evolution of man-made objects (Pitt-Rivers, Oxford), folklore (Musée de Folklore, Antwerp), folk or open-air museums (Skansen, Stockholm), war museums, museums of archaeology, shipping, whaling, etc.

A very distinct type of museum is that which illustrates and commemorates the life and work of a person, the museum building being usually the house of, or intimately connected with, the person commemorated. Examples include the Shakespeare museum (Stratford-on-Avon), and Dickens

(Portsmouth), Borrow (Norwich), Wm. Wilberforce (Hull), Dürer (Nuremberg), Beethoven (Bonn), Michelangelo (Florence), etc.

The main functions of a museum are the collection and preservation of specimens and data, which help to widen knowledge by the investigations of experts, and the education and instruction of visitors and students by its exhibits and the method of display. Some museums now have a special portion set aside for children; the U.S.A. first introduced special children's museums. A local museum should mainly deal with the history, natural history, archaeology, etc., of the locality.

By the Sunday Entertainments Act, 1932, museums in England may be open on Sunday in spite of the Sunday Observance Acts, even where there is a charge made for admission.

#### Open-Air Museums

Most museums arrange their exhibits to illustrate particular branches of knowledge, e.g. to show the types of British sea-birds, the ceramic art of China, the evolution of musical instruments, and the distribution of the various types, etc. A form of exhibit common on the continent of Europe is the reconstruction of interiors of rooms, to show the different types of building, architecture, furniture, and modes of living at different periods and in various districts. Particularly noteworthy of this kind were the museums at Zürich, Munich, Amsterdam, Stockholm, Oslo and other centres. An improvement in this direction is the idea first started by Dr. A. Hazelius, at Stockholm, of an open-air museum, later part of the Northern Museum, and known as Skansen. In this way national or local life and history is exhibited in the most attractive manner, with whole buildings preserved and suitably fitted up and furnished, as well as other out-of-door objects, with also exhibitions of folk dances, games, and other pastimes of former days. This type of museum arrangement is common in Scandinavia.

The threat of bomb damage necessitated the removal of most of the exhibits from London's museums during the Second Great War; only such as were too large for easy removal were left in place, protected by blast walls and sandbags. Nevertheless, the London museum contrived a special exhibition for the 1900th anniversary of the city's foundation. For

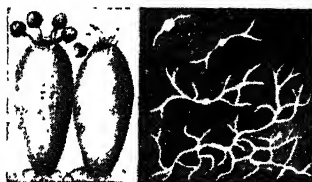
the rest, the treasures were dispersed in safe places all over the country. Most of the paintings from the National Gallery were stored in a quarry near Blaenau-Ffestiniog, in Wales. Exhibits from the British and Victoria and Albert museums went to Corsham quarries, near Bath; from the Tower of London and the Wallace Collection, to Hall Barn, Bucks, and to West Wickham park; while other valuable national possessions were kept at Mentmore and other country estates, and in the disused part of the Holborn-Aldwych tube rly. Continental museums, less exposed to material damage, were ruthlessly plundered by the occupying Nazis, and German collections, public and private, were enriched by treasures from the Louvre, from Brussels, Amsterdam, Florence, and Copenhagen. With the development of the Allied air attacks, most of these were stored in mines, together with the exhibits from the German museums and art galleries; and this precaution has preserved for mankind treasures of incalculable value, for the greater part of the fabrics of the museums of Berlin, Dresden, Munich, Cologne, etc., were totally destroyed. *Consult* Museums, their History and Use, D. Murray, 3 vols., 1904.

**Musgu Country.** Former dist. of Central Africa, bordering on Bornu and Baghirimi. It occupied a portion of the basin of Lake Chad between the Logone and Shari rivers. The Musgu people are fishers and tillers of the ground. *See* Africa.

**Mush,** MUS, or MOUSH. Town and vilayet of Turkish Armenia. Situated near the Murad Su branch of the Euphrates, it is about 80 m. S. of Erzerum, or 40 m. W. of Lake Van. Before the First Great War it was the natural centre of the trade of a wide district, and contained several mosques and churches. It was the seat of a R.C. and of a Gregorian bishop. Largely peopled by Armenians, it was surrounded by a number of prosperous Armenian villages. In July, 1915, the Turks, having massacred the Armenians in the neighbourhood, took Mush after heavy fighting in the streets. Much of the town was reduced to ruins, and the surviving Armenians were slaughtered or deported. The Russians drove the Turks out of it on Feb. 19, 1916, but had to evacuate it temporarily in Aug., 1916, and abandoned it in the winter of 1917-18. Pop., vilayet, 82,518; town, 28,000.

**Mushki** or **MUSKI**. Ancient people of Aryan relationship in Asia Minor. The Moschi of Greek writers, they inhabited Mushku, the Biblical Meshech (Ezek. 32). They came into hostile contact with the Hittites and Assyrians about 1200 B.C., but were successively subdued by Tiglath-Pileser I, Ashurnatsirpal, and Sargon, who in 709 defeated their king, Mita, a name perpetuated in the Midas of later Phrygian history.

**Mushroom** (*Psalliota campestris*). Purple-spored fungus of the family Agaricaceae. A native of



Mushroom. Spores developing and the threads that spring from them

Britain and the temperate portions of Europe, it occurs profusely in pastures where horses have grazed, their manure affording the most favourable pabulum for the plant. What is known as the mushroom is only the spore-bearing organ or fruit of the fungus, the vegetative portion living in the ground as a ramification of white cottony filaments (*mycelium*), thriving as a saprophyte upon organic waste. At certain points upon the mycelium swellings are produced, which develop into small sporophores completely enclosed in a membrane (*volva*).

The old idea that mushrooms are formed in a night is fallacious, for the process may take many months. Under favourable conditions of warmth and moisture a rapid expansion of the cell structure takes place, similar to that which occurs when a dry bath sponge is dipped into water. The sporophore bursts through the earth, ruptures the volva, and the upper part (cap or *pileus*) expands in umbrella form. Under the cap thin plates set edgewise radiate from the stalk, and on these the microscopic spores are produced in sets of four, aggregating millions. The commoner horse-mushroom (*P. arvensis*) agrees with *P. campestris* in most points, but is considerably larger and more strongly flavoured than is the latter variety.

The cap of the common mushroom is white and silky, at first hemispheric, and later flat, from 3 to 5 ins. across. The plates or gills,

which are at first salmon-pink, become dark amber as the spores ripen. It appears in nature from May to December, but, cultivated in specially prepared beds, where the proper temperature and humidity are maintained, it may be obtained at all seasons. For this purpose caves, cellars, railway arches, and disused tunnels have been used; more commonly they are grown in special houses, or in covered beds outside. These are prepared from fresh stable manure, turned and loosened daily until the fiercest heat of fermentation has escaped; then it is packed firmly to a depth of about a foot on a firm dry base, and boards on edge are firmly fixed along each side to prevent loss of heat and moisture.

When the temperature has dropped to 80° or so, the bed may be impregnated by pressing in pieces of an old mushroom-bed or of so-called mushroom-spawn. These bricks are permeated by the mycelium in a dry and therefore resting condition; they should be broken into pieces about

1 in. square, and dotted all over the bed about 4 ins. apart. The bed should then be evenly coated with finely sifted loam to a depth of an inch, and beaten firm. A covering of litter will help to retain moisture and an equable temperature, which ought not to fall much below 50°. Slight waterings will be necessary to maintain moisture, but only tepid water should be used.

When the mushrooms appear they should be gathered in the unexpanded or "button" stage, as the flesh is quickly attacked by the larvae of flies, which render them unwholesome. Poisoning by eating mushrooms is due either to these being in a decaying condition, or to the appearance in the bed of definitely poisonous species, the spores of which were introduced with the manure. Numerous allied species of fungi are equally good as food, but cannot be grown artificially with the same certainty. See *Agaric*; *Blewits*; *Fungus*; *Hedgehog Mushroom*. Consult *Edible Fungi*, J. Ramsbottom, 1948.

## MUSIC: ART OF ORGANIZED SOUND

Gerald Abraham, Professor of Music, Liverpool Univ.

*This survey of the history and development of a great art is supplemented by articles on individual composers, e.g. Bach, Beethoven, Handel, Mozart, and on Orchestra; Opera; Symphony, etc., as well as on the various musical instruments. See also Harmony; Singing*

Music is the art of organized sound. At what stage in its evolution man began to organize the vocal cries of emotionalised, heightened speech—if indeed such cries did not actually precede articulate speech—and the percussive noises he could make by banging together sticks or stones; at what stage he began to augment these sounds by blowing into reeds or setting a stretched cord in vibration by plucking it or scraping it: all this remains unknown. It lies far back in pre-history and we can only guess at its processes by study of the music of surviving primitive peoples such as the Australian aborigines.

From the dawn of history proper we find man in possession of an art of music, already with symbolic associations attached to groups of sounds (military, ritual, emotional). With the heyday of their civilization, the Greeks had evolved a subtle and complicated system of music, on the theories of which we are fully informed, although, ironically, we know extraordinarily little about how it actually sounded. Nor do we know how, if

at all, it was related to the music of the other Mediterranean peoples of the same period. We can only surmise with some confidence that a few centuries later the music of the early Christian Church drew upon both Hebrew and Greek sources. That early Christian music itself developed several species of chant: the Byzantine of the Eastern Church; the Ambrosian and its less florid offspring, the Gregorian, of the Western; the Mozarabic of Moorish Spain.

The great turning point in musical history occurred when, about the 8th or 9th century A.D., European music began to make use of different sounds simultaneously. From that point onward, while the musics of the Eastern peoples generally developed through (presumably) ever-increasing subtlety of melody and rhythm, Occidental music began to be a polyphonic or harmonic art, and its history is the record of successive attempts to construct polyphonic or harmonic edifices of sound in terms of the prevailing social conditions and

requirements and the resources available for performance. Each attempt reached a peak of technical perfection and produced masterpieces in that particular style; each ended by exhausting the possibilities of its technique and obliging musicians to devise a new one. Thus, broadly speaking, we have periods of pure style in which great masterpieces are most likely to appear, and transitional periods in which the débris of the old technique is mingled with experiments toward the new. Needless to say, this neat pattern is frequently interrupted by the appearance of geniuses who often come too early or too late: Bach was a belated specimen of the style that culminates in his work, while the last works of Beethoven were fifty years ahead of their "due" time.

#### Medieval Church Music

Throughout the Middle Ages musicians were concerned above all with the basing of large structures on the plainsong melodies of the Church. (The secular solo songs of the noble troubadours and *Minnesinger*, and of the common people, followed a simpler course.) The medieval Church composers ran their plainsong chants in mainly parallel courses (*organum*) or combined several chants, sometimes with secular songs and words simultaneously (*motets*), and each development demanded or was made possible by an advance in the notation of music: methods of indicating first the relative, then the precise rise and fall of the voice, then the relative, finally the exact length of each note. The earliest "master" period of polyphonic music came in France at the end of the 12th century and beginning of the 13th, with Léonin and Pérotin. It was succeeded about 1330 by the so-called *ars nova*, in which (among other changes) the old church modes began to show some of the characteristics of the modern major and minor scales, apparent still earlier in the songs of the *trouvères* and troubadours. The outstanding master of the *ars nova* was Guillaume de Machaut, earliest musician to compose a complete setting of the Mass. In the music of this period, and for long after, composition was essentially a matter of combining strands of melody—performed indifferently by voices or instruments or both together or both in alternation—without overmuch regard to harmonic clashes. Successive refinements tended to smoothe out such

clashes, while the tendency of *ars nova* to place the most important part in the highest voice instead of in the tenor was also developed. Successive waves of polyphonic achievement reached their peaks in Dunstable, Dufay, and Binchois (early 15th century); Obrecht, Okeghem, and Josquin des Prés (late 15th century); Palestrina, Lassus, and Victoria (16th century).

By the 16th century, however, the high polyphonic style was no longer practised only in the music of the church. Important secular polyphonic forms such as the madrigal had come into existence, still half-vocal, half-instrumental at will; while instrumental music had developed parallel forms of its own, such as the fantasy. Keyboard instruments other than the organ came into use, and the virginals, a species of small harpsichord, were specially cultivated by the Elizabethan composers of England, headed by Byrd. But from this time onward the names of eminent composers multiply too rapidly for mention.

#### The Earliest Operas

The end of the 16th century saw the birth of important new forms: the opera and oratorio, always closely allied. Opera came into existence through the efforts of a group of Florentine amateurs to recapture the secret of performance of Greek tragedy; they thought they had found it in what we know as recitative (musically declaimed speech) and the earliest operas, such as Peri's *Euridice* (1600) and Monteverdi's *Orfeo* (1607) consisted mainly of recitative. But Monteverdi was no doctrinaire; even in *Orfeo*, and much more in his later works, he refused to submit music entirely to the domination of the word, and he injected frankly melodic elements into his recitative, as well as interspersing instrumental passages. This tendency for music to take the upper hand in opera grew continually stronger for something like a century and a half, particularly in Italy, although in France it was resisted. Since then from time to time "reformers" of the opera have appeared (e.g. Gluck in the middle of the 18th century, Wagner and Moussorgsky in the 19th) to reassert the importance of the dramatic element in opera.

During the 16th century vocal polyphony lost its former predominant position, though instrumental polyphony lived on in the fantasy and kindred forms and in

their later offspring, the fugue. But side by side a new kind of instrumental music was asserting itself: a mainly harmonic kind of music, disregarding melodic lines except in the highest and lowest parts ("melody" as popularly understood, and bass). The filling-in between top and bottom was a matter of more or less artistic routine, seldom written out in full but merely indicated by figures under the bass (*basso continuo*) which would be played simply if by a stringed instrument, with improvised chords if by organ or harpsichord. This texture was used alike for solo songs with lute accompaniment, for instrumental music in opera, for suites of dances, and for sonatas (sets of generally four instrumental pieces, of contrasted speeds).

#### 18th Century Styles

During the first half of the 18th century this kind of texture gradually triumphed over the harmonic polyphony whose last great exponent was J. S. Bach. By the middle of the century the melody-with-accompaniment was completely triumphant in the so-called *galant* style, relatively flimsy in texture, considered by its exponents to be more expressive than the older music. The operatic overture or "symphony before the opera," a set of three pieces (quick-slow-quick), had become so popular that overtures—or symphonies, as they now came to be called—were written independently for performance at public concerts to which anyone who paid could gain admittance—in sharp distinction from older music-making which had been either in ordinary living-rooms or in the halls of palaces or in the open air. In the *galant* style an old instrumental form, the concerto (in which different instrumental groups or soloists were pitted against each other), began to take on a new form in which a soloist was pitted against an orchestra and seized the opportunity to display his virtuosity. The orchestra itself, which right up to Bach's time had been an *ad hoc* collection of instruments, now began to adopt a settled constitution, of which strings formed the basis, with the various wood wind, horns, trumpets, and drums (at first only some of these) in pairs as regular auxiliaries.

More settled and more elaborate instrumental resources made it possible for composers to indicate more precise methods of filling in the harmonic texture. The space between melody and bass could be

filled with instrumental figuration, so that the keyboard *continuo* part became redundant and died out. Similarly, whereas in private music-making (chamber music) the favourite instrumental combination had been two violins, a cello to play the *continuo* part simply, and a harpsichord to play it with harmonic filling-out, the favourite chamber combination towards the end of the 18th century was the string quartet of two violins, viola and violoncello, which was self-sufficient without a keyboard instrument. And the favourite keyboard instrument itself was now the pianoforte, with expressive powers and dynamic range already far exceeding those of the harpsichord and its still weaker brother, the clavichord. The music of this period, above all its instrumental music, reached its highest development in the hands of four composers all domiciled in or near Vienna: Haydn, Mozart, Beethoven, and Schubert, of whom Mozart was also one of the greatest of all opera composers and Schubert virtually, though not actually, the creator of the modern song with piano accompaniment.

#### The Growth of Romanticism

The "Viennese classical period" was succeeded by what is generally known as 19th century romanticism. Romanticism had many facets: exploitation of new orchestral resources and much larger orchestras by Berlioz, Wagner, Rimsky-Korsakov, and others; exploitation of the resources of the piano by Liszt, Chopin, Schumann, and Brahms; opening up of new harmonic resources by several of these composers; closer linking of music with literature and painting. "Programme" music, i.e. music that attempts to imitate or suggest non-musical happenings, pictures, even stories, was nothing new in the 19th century. Every generation had practised it in one way or another either through more or less direct imitation or through associative sound-symbols. But the 19th century was not only fond of programme music, but linked its essays in it with literature and invented a new term to describe this kind of orchestral piece: the symphonic poem. The tendency was carried to its furthest extreme towards the end of the century in the works of Richard Strauss. But the real keynote of romanticism was a kind of personal aggrandisement, most obvious in its exploitation of instrumental virtuosity (pianists and violinists) but also permeating musical crea-

tion. Composers no longer worked as craftsmen first and foremost; they now wrote to express their personalities, wrote piano pieces that were essentially intimate diary entries (Schumann) and symphonies that were spiritual confessions (Tchaikovsky). They claimed the right to be free, despised working to commission. A similar form of self-consciousness led nation after nation to attempt to find its own musical language, usually founded on its folk-song, instead of being content to speak an international musical language with an accent or at most in a dialect; the movement was headed by the Russians in the mid-19th century, while the English brought up the rear at the beginning of the 20th century.

The romantic attitude, the attitudes of art-for-art's-sake and art-as-personal-expression, gradually led through the first quarter of the 20th century to a species of inbreeding, to music so refined and subtilised that only professional musicians or leisured amateurs could understand and appreciate it. The composer wrote for himself or his fellows—and then illogically felt aggrieved because the layman ignored it, preferring a different kind of "modern music," the popular music of the American negro: jazz. During the 1930s this gulf between the contemporary composer and the lay public began to narrow, partly through a natural reaction on the part of the musicians, partly because of government pressure in the totalitarian states where all art must serve an ideology, partly because of economic pressure and inducements (such as the large sums paid for commissioned film music) in the capitalist democracies. Now in the mid-century contemporary music is, if not popular, at least not completely out of touch with the ordinary music lover, particularly since the

latter for his part has so many opportunities to familiarise himself with little-known music through radio and the gramophone.

**Bibliography.** A History of Music in England, E. Walker, 2nd edn., 1924; The Oxford History of Music, various authors, 7 vols., 2nd ed. 1929-34; The Progress of Music, G. Dyson, 1932; The Oxford Companion to Music, P. A. Scholes, 1939; Grove's Dictionary of Music and Musicians, 4th edn., 6 vols., 1940.

**Music, GUILDHALL SCHOOL OF.** Institution for the musical training of amateurs and professional students founded in 1880 by the corporation of the City of London. Its original home was a warehouse in Aldermanbury, and the present fine building with entrance in John Carpenter Street, E.C., was opened 1887 and enlarged 1898.

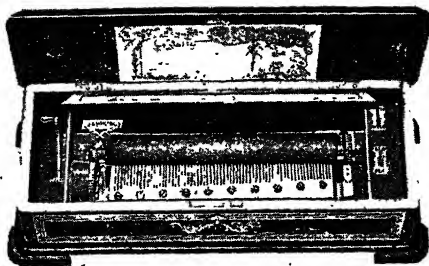
**Music, ROYAL ACADEMY OF.** London's oldest school for musical training, founded 1822 and opened 1823 at Tenterden Street, Hanover Square. The present building in Marylebone Road, with excellent concert hall, was opened 1911. Diplomas of fellowship, associate-ship, and licentiate-ship (F.R.A.M., etc.) are awarded; and the academy is represented with the Royal College of Music in an associated board for local and school examinations throughout the British empire.

**Music, ROYAL COLLEGE OF.** London institution for musical study and training founded by Edward VII, as prince of Wales, in 1882, as successor to the national training school for music, and incorporated by royal charter in 1883. The premises in Prince Consort Road, Kensington, were opened 1894, a fine concert hall being added 1901. The college owns a valuable library and the Donaldson museum of old and rare musical instruments.

**Music, SCHOOLS OF.** Institutions for musical training in addition to those detailed above are mentioned under the heading School of Music.

#### Musical Box.

Instrument producing music by mechanical means. Clock-work, driven by a spring, moves a cylinder from which pins project at proper positions, and strike the ends of steel vibrators tuned to the notes of the scale, the vibrators and the



Musical Box opened, showing comb and barrel actuated by the clock-work on left

continuous steel plate from which they are cut, and which gives them resonance, forming a sort of graduated comb. Mechanical musical toys of great ingenuity were made as early as the 15th century, especially in the Netherlands; in their present form they date from the beginning of the 19th century, and are still chiefly produced in Switzerland, the country of their origin. Some of the larger specimens contain as many as 36 tubes on one barrel, and allow of exchanging barrels.

**Musical Comedy.** Type of light stage entertainment especially popular in Great Britain and the U.S.A. Similar to the operetta in form, musical numbers being interspersed with spoken dialogue presenting some sort of light-hearted love story, it acquired its own recognizable conventions built around the stock rôles of juvenile lead (or hero), ingénue (or heroine), soubrette, comedians, and chorus. The heyday of musical comedy in England was reached in the first decade of the 20th century, with the London productions of George Edwardes (*q.v.*) at the Gaiety theatre and Daly's theatre, and such popular exponents of the art as Gertie Millar and Huntley Wright.

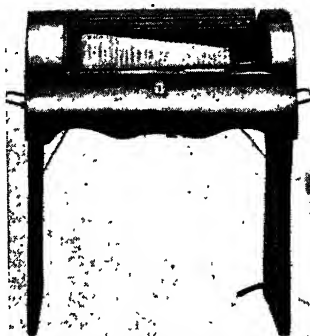
American influence and the competition of revue gradually altered its character, increasing its liveliness, giving more importance to the star performers, especially the comedians, and emphasising the spectacular aspect, though possibly losing some of its charm.

**Musical Festival.** Music-making on a large scale, the concerts being generally spread over more than one day. In England the oldest is The Three Choirs' Festival of Gloucester, Worcester, and Hereford, founded in 1724, and held annually in the above cities in rotation. Other important festivals, held mostly at triennial periods, were Birmingham, 1768; Norwich, 1824; Leeds, 1858; Bristol, 1878; Cardiff, 1892; and Sheffield, 1895. A London Music Festival was inaugurated by the B.B.C. some years before the Second Great War. Such festivals aim not only at the performance of standard works of known popularity, but also at the encouragement of British art, by commissioning native compositions, and occasionally foreign works, *e.g.* Mendelssohn's *Elijah*, Gounod's *Redemption*. The Glyndebourne (*q.v.*) operatic festival was annual 1934-39. An annual international

festival was opened at Edinburgh in the autumn 1947.

A minor type of musical festival is the competition festival founded on the lines of the Welsh Eisteddfod. There are many of these, great and small, held regularly in different parts of the U.K., and even more in the U.S.A.

**Musical Glasses.** Musical instrument, consisting of glass vessels either selected for their in-



**Musical Glasses.** An ingenious musical instrument of the 18th century  
From *Old English Instruments of Music*  
Methuen & Co.

trinsic notes, or tuned by having water poured into them. Penetrating tones are produced by rubbing the rims of the glasses with the moistened finger. The device, first known in the 17th century, was improved by Richard Pockrich, an Irishman, and became a fashionable entertainment in the middle of the 18th century, being mentioned by Goldsmith in *The Vicar of Wakefield*. It was further developed by Benjamin Franklin, who mechanised it by mounting the glasses on a revolving spindle, their lower edges being made to pass through water. Mozart and Beethoven were among those who composed works for the mechanised instrument, which was alternatively called the harmonica.

**Musical Terms.** Terms used to indicate the various means by which a composer shows the precise character of a musical work. They fall into different classes according to their nature and significance. The first has to do with notation, *e.g.* staff, clef, notes, rests, bars, sharps, flats, etc., and covers pitch, time, and rhythm. The next class embraces terms referring to the pace of the music, such as *allegro*, *moderato*, *andante*, etc., of equal importance being those of the third class affecting style, phrasing, and expression, such as *animato*, *grazioso*, *brillante*, and the like. The dynamic class is concerned

with the various degrees of force required, such as *p.* (*piano* = soft), *f.* (*forte* = loud), *crescendo* (increasing), *diminuendo* (lessening), etc. Many of these terms, with the exception of those in the first class, may be qualified by additional terms, such as *un poco* = a little (*un poco animato* = rather animated), or *non troppo* = not too much (*non troppo allegro* = not too fast). Then come the names of voices, instruments, etc., and next the terms used in respect to melody and harmony, such as *scale*, *interval*, *consonance*, *dissonance*, etc. Lastly, there are purely mechanical directions, *e.g.* *volti subito* = turn over the page quickly, *da capo* = from the beginning, and so on.

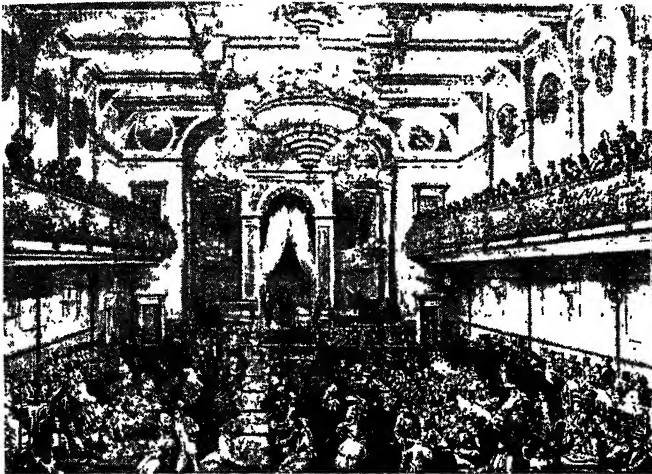
The usual language employed is Italian, because in medieval days the great centres of musical instruction were in Italy. The words indicating style, pace, etc., were naturally those in everyday use, but they became conventionalised. Thus *allegro* (gay) now equals quick, and *andante* (going or moving) equals slow. For over a century composers have shown an increasing inclination to use their own language. Consult *Everyman's Dictionary of Music*, ed. E. Blom, 1946.

### **Music and Dancing Licence.**

Official authorisation required before any place can be used for public dancing or music. In London the licences are granted by the L.C.C. An occasional licence may be granted. In Middlesex licences are issued by the co. council. In parts of the Home Counties, mainly those parts within 20 m. of London, licences may be obtained from the co. or co. bor. council. Throughout the rest of England and Wales the licensing justices, *i.e.* the justices who grant licences for the sale of intoxicating liquor, issue also the music and dancing licences, in areas in which the Public Health Acts Amendment Act, 1890, has been adopted or applied. In some other areas local Acts of parliament make special provisions for that area. Where the Public Health Acts Amendment Act has not been adopted and where there are no local Acts no licence is required.

Conditions may be attached to a licence which *inter alia* may relate to the structural arrangements of the building in which the entertainment is to take place. A licence cannot be granted for dancing on a Sunday although a licence may be granted for a musical entertainment which does not infringe Sunday Observance Acts.





Music Hall. Interior of Weston's Music Hall, High Holborn, predecessor of the Royal Holborn, from a print about 1865. Refreshments were served at the tables, while the chairman and his circle of "gilded youth" sat immediately before the stage in the place now occupied by the orchestra.

**Music Hall.** Place of amusement licensed for the performance of music, dancing, and varied public entertainment. It is thus distinct from a theatre, which is intended for the exhibition of stage plays. The variety entertainment of the music hall is a natural development of the informal smoking concert, performers at which were regular frequenters of the tavern. The licensee of the premises next engaged professional singers and, making no charge for admission, recouped himself by the sale of refreshments to members of the audience between the items on the programme, which were announced by a chairman.

Saloon theatres attached to the larger taverns were the next stage, being licensed by the magistrates and permitted to charge for admission to the entertainment, which steadily encroached further upon the privileges claimed by the lessees of the patent theatres. In 1834 a performance of *Othello* at the Britannia, Hoxton, brought matters to a crisis. The producer and performers were fined, but the consequent agitation led to the abolition by parliament of the patents, and to competition wholesome in its effect upon theatres and music halls alike.

The first music hall of the modern type was the Canterbury in Westminster Bridge Road, opened 1849. Others followed, not only in London but in provincial centres, where such enterprises as Moss Empires Ltd. established chains of music halls covering the leading towns, enab-

ling music hall artists to undertake regular tours. Its robust form of entertainment, owing little to the aspirations of culture and refinement but a great deal to broad human appeal in comedy, sentiment, and sensation, made it the ideal entertainment for the so-called man in the street. But with the growing competition of the cinema and of revue after the First Great War the great days of the music hall appeared to have passed, though the old tradition is still here and there maintained. Sir Oswald Stoll (*q.v.*), who ran the London Coliseum, was said to have killed the music hall by making it respectable. It is essentially English in its development, though vaudeville in France and burlesque in the U.S.A. are broadly synonymous terms. Consult *The Story of the Music Hall*, A. Haddon, 1935; *Winkles and Champagne*, M. W. Disher, 1938; *The Early Doors*, H. Scott, 1947.

**Musicians' Company.** London city livery company. Originating from earlier guilds, it was first



Musicians' Company Arms

granted authority over all minstrels within the City by an Act of common council, dated 1500. Later, dancing masters were also included. Under the original and subsequent Acts it exercised control over the profession in the City until late 18th cent. The company administers a number of scholarships and

prizes and a fellowship in music. The clerk's office is at 1, New Court, W.C.2.

**Musk** (*Mimulus moschatus*). Perennial herb of the family Scrophulariaceae and a native of N. America. The above-ground branches and thin, opposite, oblong leaves are coated with soft hairs which up to 30 years ago gave off the well-known musky odour. The plant is now scentless throughout the world. Its yellow tubular flowers have five lobes, and the stigma has two lobes, which are irritable and close together on being touched. Musk, introduced to Great Britain in 1826, is a favourite pot plant, easily raised from the minute seeds, or by division of the numerous underground stems. It requires frequent, copious waterings. Harrison's musk is a larger, cultivated form. See *Mimulus*.

**Musk.** Dried secretion from certain glands of the male musk deer (*Moschus moschiferus*). Its natural purpose appears to be for the attraction of the female. It was long in esteem as a medicine, but now its major use is as a fixative in perfumery. As imported it forms soft, greasy lumps of a reddish-brown tint, giving out the strong, peculiar odour always associated with the name. It can be dissolved in ether. Like civet, it forms the basis of many choice perfumes; and in its natural condition is probably the most enduring of all odours—so long as the substance remains, the odour suffers no diminution. When newly extracted from the deer, however, it is more repulsive than attractive. Artificial musk is used industrially.

**Musk Deer** (*Moschus moschiferus*). Small species of deer found among the mountains of Central Asia. Usually found in pairs, never congregating in herds, it is about 20 ins. high, has a greyish-brown



Musk Deer. Young female of the Central Asian species  
W. S. Berridge, F.Z.S.

pelt, and in certain anatomical features approaches the antelope. Neither the male nor the female has antlers. The upper canine teeth of the male are about 3 ins. long, and project as conspicuous tusks. It is much hunted for the valuable musk, secreted by an abdominal gland, and used as an ingredient in many costly perfumes.

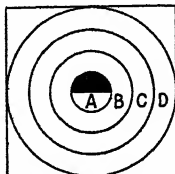
**Muskegon.** City of Michigan, U.S.A., the co. seat of Muskegon co. Situated along Muskegon Lake, through which the Muskegon river enters Lake Michigan, 39 m. N.W. of Grand Rapids, it is served by the Grand Trunk rly. and by steamers plying to Chicago. Michigan timber passed through this port until the opening of the 20th century. Now motor vehicles and machine tools are the major manufactures. Muskegon has a good harbour, which exports fruit and garden produce. Settled in 1834, incorporated in 1861, it became a city in 1870. Pop. 47,697.

**Musket.** General term for any form of smoothbore firearm formerly used by a foot soldier. Muskets were introduced in the latter half of the 16th century. They may be fired by the percussion system or by a flint, or by the application of a match to powder in the pan, hence the terms percussion musket, flint musket, matchlock. The harquebus, snap-haunce, caliver, fusil, and carbine were in all essentials muskets. As late as 1867 the troops in India had seven different kinds of smoothbore firearms, viz. two muskets, four carbines, and a fusil for sergeants. The fusil used the musket ammunition, but was 1 lb. lighter to carry. So-called carbines were of the same calibre as the fusil and about the same weight. The official manual on shooting is still called British Army Musketry Regulations. See Brown Bess; Firearms. Flintlock; Fusil; Guns; Matchlock; Rifle.

**Musketry.** Art of shooting with portable firearms in general, and with the military rifle in particular. Accuracy of small-arm fire as a factor of military importance has been a gradual development of organized warfare. It probably attained its zenith in the S. African War. Every endeavour was thereafter made to train British infantry to become expert shots at all ranges as well as attaining great proficiency in rapid fire. As a corollary, musketry was practically taught for the prone position.

The German army, on the other hand, fostered rapidity of fire rather than accuracy for the gene-

ral body of the troops. This system developed firing from the hip, standing, or kneeling positions as of at least equal value to the prone position, the troops actually firing whilst advancing. The First Great War showed that, despite the use of firearms, opposing infantry were nevertheless



**Musketry.** Standard practice target. A, bull; B, inner; C, "magpie"; D, outer

able to get into close touch.

In the Second Great War automatic weapons, such as the Sten and Thompson sub-machine-guns, largely replaced the rifle. These had a short range, 50-100 yds., and were often used when the firer was moving; so much of the old musketry training gradually fell into disuse. The No. IV rifle, issued during the war, was sighted only up to 500 yds. and was not so accurate as the S.M.L.E., thereby discounting some of the skill of the trained rifleman.

**Musketry, SCHOOL OF.** Military establishment for providing training in the principles of shooting with the rifle. In Great Britain a school of musketry was established at Hythe, Kent, in 1854. It is now a branch of the Small Arms School at Netheravon, and thereat instruction is given in the use of the rifle, revolver, bayonet, and grenade. The courses were remodelled upon the adoption successively of the Snider (1866), Martini-Henry (1870), the Lee-Metford, and other rifles. At the head is a general officer known as the commandant.

**Muskogee.** Second city of Oklahoma U.S.A., the co. seat of Muskogee co. Built near the confluence of the Verdigris and Grand rivers with the Arkansas, 50 m. S.E. of Tulsa, it is served by rlys. The surrounding district produces cotton, oil, zinc, and lime, and industries include the manufacture of lead products, oilwell equipment, road machinery, and tents. There are a state school for the blind, veterans' hospital, and commercial college. A Bacone, 2 m. to N.E., is Indian university. Muskogee was founded in 1870 and became a

city in 1898. During 1900-10 the pop. increased sixfold: in 1940 it was 32,332.

**Muskogees** (Algonquin, Creeks). North American Indian tribe formerly ruling the Creek confederacy. Originally immigrant from the W., they were found by British colonists in the 17th century in Georgia and Alabama, whose many sea-inlets suggested their name. The Creek war, 1813-14, cost them most of their land. By a conveyance, 1852, the Creeks ranked in Oklahoma as one of the five civilized tribes, until their separate nationhood ceased in 1906. In 1915 the Creeks numbered 18,776. The Muskogees give their name to the Muskogean family, which embraces Chickasaws, Choctaws, Natchez, and Seminoles. See American Indians.

**Muskoka.** Region of great natural beauty in the Lakes Peninsula, Ontario, Canada. It contains a river and lake of the same name. From 800 to 1,000 lakes are connected by hundreds of streams all available for passage by canoe. The river rises in the S.W. corner of Algonquin national park, and flows S. to Lake Simcoe, through the E. end of Lake Muskoka. On it the South Falls are notable. The lake is 20 m. long. The region is a summer camping ground for Canadians and Americans, and contains several hotels. Steamers ply on the larger lakes, and the region, which is crossed by the C.P.R. and C.N.R., attracts visitors for hunting, angling, boating.

**Musk Ox** (*Ovibos moschatus*). Large ruminant mammal. Found in the Arctic regions, it is placed by zoologists between the sheep and ox, but is probably a type of sheep. Its flesh is tainted with a musky flavour. It is covered with long, thick, brownish hair, and the horns of the male are wide and flattened on the forehead. Its range is now confined to the ex-



**Musk Ox.** Specimen of the North American ruminant found in Arctic regions

treme N. of America; but formerly it occurred in N. and Central Europe, and bones are found in Great Britain. It lives amid the deep snow of the most barren regions, and seldom long survives removal to Europe.

**Muslim League.** Organization of Muslims in India. Formed in 1906, it had as its immediate aim the achievement by Muslims of a greater share in the control of Indian affairs. During the 1920s there was serious internal dissension, but in 1934 a measure of reconciliation was effected, and on the eve of the first elections held under the Government of India Act of 1935 the Muslim League emerged as a powerful organization.

Under its president, Mohammed Ali Jinnah (*q.v.*), the league worked for Indian independence, but saw a danger of the country being dominated by Hindus. At a meeting in Lahore in April, 1940, a resolution was adopted calling for the formation of a separate nation for Indian Muslims; despite urgent appeals to the Muslims to remain within the Congress party, anti-Hindu feeling grew among them and crystallised into the demand for Pakistan (*q.v.*). Jinnah stated that, without prejudice to later adjustment of larger issues, the league was willing to cooperate with the British in war against the Axis.

The league's claim to represent the 90,000,000 Muslims in India was warmly disputed by several groups. A number still worked in the Congress party for the establishment of a unified independent state. But the influence of the league increased in Sind, Bengal, Assam, and the N.W. Frontier province, and in 1943 Muslim League ministries were formed in Sind and Bengal.

The interim government proposed by the British cabinet mission of 1946 to work out a constitution for an independent India was to contain five members of the Muslim League balanced by five Congress members. On July 29, the league decided to withdraw support from the scheme and launch a policy of "direct action"—which led to mob violence in Calcutta, Dacca, and elsewhere in Aug. Sir Firoz Khan Noon and other leaders renounced all titles conferred on them by the British. When the viceroy, determined to proceed with plans, nominated non-league Muslims to the interim government, the league came into negotiations, and on Oct. 13 five

of its representatives were appointed, though Jinnah declined nomination and his followers boycotted the constituent assembly. The establishment, by the Indian Independence Act of 1947, of an independent Muslim state, Pakistan, embracing W. Punjab, Sind, E. Bengal, Assam, and the N.W. Frontier province, was the triumph of the Muslim League.

**Muslin.** Fine cotton fabric used for dresses, curtains, etc. The name is generally believed to come from Mosul, a town on the Tigris, where the fabric is said to have been first made. Marco Polo refers to muslins of silk and gold made at Mosul. From early times India has been noted for its fine muslins, those of Dacca and Madras being specially delicate. There are also silk muslins, often sold under their French name of *mousselines*, but these are of less importance.

**Muspratt, JAMES** (1793–1886). British chemist. Born in Dublin, Aug. 12, 1793, he was a drug-



James Muspratt,  
British chemist

gist's apprentice, and then served in the Peninsular War with both the army and the navy. Having received a small property after a long chancery suit, he started the manufacture of chemicals in Dublin in 1814, and in 1823 moved to Liverpool, where he began to make soda by the Leblanc process. He opened works at Widnes and St. Helens, and made sulphuric acid. A friend of Liebig, he undertook the manufacture of super-phosphates and artificial manures invented by that chemist. The founder of the South Lancashire alkali industry, Muspratt died in Liverpool, May 4, 1886.

**Muspratt, JAMES SHERIDAN** (1821–71). British chemist. Born March 8, 1821, in Dublin, eldest son of the above James Muspratt, he studied chemistry at Glasgow and University College, London. He took a post under Liebig at Giessen, where he carried out researches on sulphites, toluidine, and nitraniline. Returning to England, he settled in Liverpool, where he died April 3, 1871. His *Dictionary of Chemistry*, 1854–60, a standard work, was trs. into Russian and German.

**Musquash** (*Ondatra zibethica*). N. American rodent, found chiefly in Alaska and Canada. The body



Musquash. Specimen of the small North American rodent (also known as musk-rat), extensively trapped for its fur

with the head measures about a foot, the stout tail is laterally compressed to suit its semi-aquatic habits; the hind feet are partially webbed. Herbivorous, it favours the margins of lakes and ponds, where in autumn it amasses great heaps of edible roots, reeds, and sedges, often plastered with mud on the exterior. Its burrows communicate with this winter food store. Its musky scent-glands have earned for it the alternative name of musk-rat, shared by the unrelated desman (*q.v.*) and the Indian shrew. The musquash is trapped for the sake of its fur. (See Fur.)

Musquash farms were started in the U.K. 1927–28, but the animal did such damage to river banks that an extermination campaign was ordered, and it is now almost extinct.

**Mussel.** Name popularly applied to a large number of bivalve molluscs, but more correctly to the common mussel, *Mytilus edulis*, of the markets. Abundant on the rocks around the British coasts, it is found in great clusters attached by the thread-like byssus which is produced by the foot. It is an important food mollusc, and thrives best around the mouths of rivers, where it obtains an abundance of food; but it is liable to pollution from sewage. Seven species of fresh-water mussels occur in Great Britain, one of them—the swan mussel—sometimes attaining a width of over 7 ins. The pearl mussel occurs in the mountain streams of the N. and W. Fresh-water pearls were formerly highly valued as gems, but they lack the lustre and beauty of the product of the pearl oyster. The pearly shells of some fresh-water mussels are used in U.S.A. for button making. See Mollusca.



Mussel. Duck mussel,  
*Anadonta anatina*

**Musselburgh.** Mun. and police burgh of Midlothian, Scotland. It stands on the Firth of Forth, where the river Esk enters it. It is 6 m. E. of Edinburgh, of which it is practically a suburb, and is connected by rly. and bus. The chief buildings are the old tolbooth, town hall, and Pinkie house. Loretto school occupies the site of a chapel dedicated in the 16th century to Our Lady of Loretto. The industries include fishing, market gardening, and the making of wire, paper, and fishing nets. Musselburgh proper and Fisherrow across the Esk, where there is a harbour for the fishing boats, are united by bridges. The town has fine golf links and a racecourse. The battlefield of Pinkie is near the town. Pop. 20,000. See Loretto; Pinkie.



Musselburgh arms

**Mussert, ANTON ADRIAAN** (1894-1946). Dutch politician, born at Werkendam, N. Brabant. He was chief engineer of waterways in the province of Utrecht, 1927-34. In 1931 he founded the National Socialist movement in the Netherlands, soon making it a replica of the German Nazi party, even to the use of the swastika. Mussert collaborated with the Germans on their entry into the Netherlands in May, 1940, and in 1942 Hitler conferred on him the title of *Führer*. He was arrested by Canadian troops in Utrecht, May 7, 1945; sentenced to death by a special court in Dec., and shot, May 7, 1946.

**Musset, ALFRED DE** (1810-57). French poet, novelist, and dramatist. Born in Paris, Dec. 11, 1810,



Alfred de Musset

the son of a war office official, he was admitted to the circle of romantics of whom Victor Hugo was the chief, and soon established himself as one of its most remarkable members. Early in 1830 he published *Contes d'Espagne et d'Italie*, which met with a cordial reception; and before the year was out his first comedy, *La Nuit Vénitienne*, was produced at the Odéon Theatre, but was not

successful. The set-back was but brief, for with *La Coupe et les Lèvres*, and *À quoi rêvent les Jeunes Filles*, two short plays published in 1832, his importance as a dramatist was immediately recognized.

Two tragi-comedies, *André del Sarto* and *Les Caprices de Marianne* followed, in 1833, and towards the close of that year he set out with George Sand (Armandine Dudevant), who was six years older, for Venice. The two writers had conceived a passion for one another, but after a few months together they separated. This episode was followed by a period of literary activity, marked by the production of some of his finest work. In 1838 de Musset was appointed librarian at the home office in Paris. A few years later

he began to suffer much in health; but in 1845 published his delightful proverb play, *Il Faut qu'une Porte soit ouverte ou fermée* (first acted three years later), and in 1847 had a stage success with *Un Caprice*. He died May 2, 1857.

Great alike as poet, dramatist, and story-writer, de Musset combined fervent passion and great lyrical genius with the finest wit and rare dramatic ability. Two years after his death George Sand published an account of her liaison with him, in the form of a novel, *Elle et Lui*; to which the poet's brother Paul retorted with *Lui et Elle*. De Musset's works were published in ten volumes in 1876. *Consult* Life, P. de Musset, 1877; *Correspondence* de George Sand et d'A. de M., 1904; *Life*, H. D. Sedgwick, 1932. See Sand, George.

## MUSSOLINI: DUCE OF ITALY

C. M. Franzero, writer on Italian Affairs

*The success and ignominious death of the Italian dictator who, seeking to raise his country to a height of glory, pushed her into unimaginable miseries. See also Abyssinia; Italy: History; Italy, Campaign in; and biographies of Mussolini's Italian associates and opponents, Badoglio; Ciano; Matteotti, etc.*

Born on July 29, 1883, at Predappio, a village in the Romagna, near Ravenna, Italy, Benito Mussolini was the son of a blacksmith. He inherited his father's socialist views, and after a short time as a school teacher went as a youth of 17 to Switzerland, where he lived three years, working as a stonemason and at odd jobs, and becoming acquainted with political exiles. Returning to Italy, he became a socialist agitator, and in 1911 was sent to prison for his denunciation of the Tripoli war. On his release he was made editor of the socialist organ *Avanti*, a post he held from 1912 to 14. A pacifist before the First Great War, he changed his views after it started, left *Avanti*, and founded the *Popolo d'Italia*, in which he preached patriotism and intervention in the war. It has been suggested that French gold helped in this conversion. He joined a Bersaglieri regiment in 1915, and in 1917, while out on practice bombing, was seriously wounded and incapacitated for war service. The Caporetto disaster of 1917 produced a mood of defeatism in Italy, to counter which Mussolini formed the *fasci di combattimento*—groups composed at first chiefly of ex-soldiers which adopted the Roman *fascas* as their symbol, and developed later into the Fascist party, growing in strength in the chaotic situation in Italy after the war.

The struggle between fascists and communists went on for some time. Only Mussolini and 30 other fascists secured seats at the elections of 1921; but on Oct. 24, 1922, before a parade of 40,000 fascists at Naples, Mussolini denounced the govt. and demanded a new administration, with five portfolios for his followers. Three days later, with an organization one million strong behind him, he went to Milan, ordered a national fascist rising, and staged a march on Rome, he himself following later by train when on Oct. 30 the king, fearing civil war, invited him to form a govt.

Thus Mussolini took power. Notwithstanding the many excesses of the Fascist régime, the Italian people for long felt content with Mussolini. His rule was from the outset dictatorial. Discipline and obedience were ruthlessly enforced; opponents were silenced; public opinion was coerced, and the press was made an instrument of the régime (1926). Mussolini often kept as many as nine portfolios in his own hands, according to himself privileges once reserved for sovereigns. His title of address was *duce* (leader). But industry



Mussolini, Italian dictator

revived, efficiency increased, and—greatest achievement in the eyes of a nation labouring under a sense of having been treated like a poor relation at Versailles—Mussolini made Italy noticed abroad.

His first opportunity to impress himself upon the world came in 1923, when the Italian delegates to the Greco-Albanian boundary commission were murdered. Imputing the responsibility to the Greek govt., Mussolini demanded an indemnity, and when Greece failed to satisfy him, he seized Corfu. The conference of ambassadors in Paris ordered Greece to pay the sum demanded, an easy success, which proved the starting point in Mussolini's use of the mailed fist.

#### The "Good European"

During 1924-34 he concentrated on internal reforms, the settlement of the Roman question (Feb., 1929) by the Lateran treaty with the Vatican being in particular an indisputable triumph for him. Events in the outer world enabled him to play the good European. In 1925 he contributed to the appeasement of Europe by joining the U.K. and France in the treaty of Locarno as a guarantor of the Franco-German frontiers. In 1933 he induced the U.K., France, and Germany to sign with Italy a four-power pact which, however, was never ratified; and when, in 1934, the Nazis, who had come to power in Germany, attempted their "putsch" in Vienna and murdered the Austrian chancellor Dollfuss, Mussolini responded by concentrating his troops overnight on the Brenner pass, thus staying the German hand. The following spring, he joined the U.K. and France in condemning Germany's denunciation of the military clauses of the Versailles treaty.

But, like all dictators, he was now itching for conquest. The authority of the League of Nations was at its lowest ebb, Italy was in acute economic distress, and a war against Abyssinia, "to avenge the humiliation of Adowa" suffered by Italy in 1896, seemed timely. Attempts by the League to solve the situation by negotiation failed, and in Oct., 1935, Mussolini went to war against Abyssinia. In Nov. the League decided that economic sanctions should be imposed against Italy, but the principal embargo, on petrol, was never enforced. The Abyssinian war was brought to a rapid and successful conclusion by May 5, 1936, and on May 9 Mussolini proclaimed Victor Emmanuel ruler of Abyssinia and emperor of Ethiopia.

The Abyssinian war left Mussolini with a belief that the U.K. and France were unable to resist any quick action by fascist Italy, and



Mussolini. The Italian duce, seen at his study table in the Palazzo Venezia, Rome

in a spirit of personal revenge against the "democracies," which had tried to thwart him in his conquest, Mussolini threw Italy into the arms of Nazi Germany, with which he formed the Rome-Berlin axis, Oct. 25, 1936. Mussolini's intervention in the Spanish civil war followed. This was most unpopular in Italy and drained the treasury without bringing any benefit to the country; but it confirmed Mussolini's belief that the western democracies were unable to resist an armed attack. In Sept., 1938, the British premier, Chamberlain, appealed to Mussolini to influence Hitler in favour of a settlement with Czechoslovakia, and Mussolini was at Munich able once more to act the good European. Great Britain threw him a bouquet by recognizing the Italian empire and signing an Anglo-Italian agreement. But France took up an attitude of antagonism, to which Mussolini responded with the cry, "Nice, Savoy, Corsica, Tunis!" On Good Friday, 1939, Mussolini invaded Albania; and on May 22 he sealed his fate with the conclusion of a treaty of alliance with Nazi Germany.

When the Second Great War broke out, Mussolini maintained for nine months a policy of "non-belligerency," miscalculating his chances, however, in 1940 by declaring war, June 10, against a U.K. and a France apparently already doomed.

France was defeated, and Mussolini had the satisfaction of entering Nice like a conqueror. But he knew nothing of the British mind and character, and had never listened to counsel. His attack on Greece in Oct. proved a catastrophe. The campaign in N. Africa at first

went better, and Mussolini actually went to the front there, prepared to ride into Alexandria in triumph. But both his and his German ally's forces were eventually driven westward. By May, 1943, he had lost all Italy's African territories, and with the Allied attack on Sicily in July the very soil of Italy was invaded.

The whole land was now seething with discontent, desiring only an end to the war. In an attempt to secure help from Hitler, Mussolini met him at Feltre on July 19; Hitler demanded that the country should be evacuated as far N. as the river Po. He returned to Rome, and at a meeting of the fascist grand council on July 24 (the first time since Dec. 7, 1939) it was moved by Grandi, according to a secret preconceived arrangement, that the king should resume command of the armed forces. Mussolini, taken by surprise, opposed the proposal violently; but it was accepted after a day of stormy debate. Mussolini went to appeal to the king, only to be asked for his resignation and taken into "protective custody" by his former chief of general staff, Badoglio (*q.v.*), who formed a provisional govt. to sue for peace with the Allies.

#### Mussolini in Defeat

Mussolini was moved to a winter sports hotel at the top of the Gran Sasso, highest mountain in the Apennines. From there he was rescued by German SS. parachutists, then picked up, with his rescuers, by a Fieseler-Storch aircraft, which landed on a plateau near by, and carried off to meet Hitler in Germany. He did not risk a return to Rome, but moved to Salo, on Lake Garda, where he set up a quivering fascist republic, so adding civil war to the miseries of the Allied campaign against the Germans in Italy. He moved later to Bergamo and then to Venice. One of the first acts of his new "government" was to prescribe the death penalty for violation of the fascist oath of loyalty to the *duce*, and under this the members of the fascist grand council who had voted against him on July 24 were tried at Verona—all except six in their absence. Ciano, his son-in-law, de Bono, and three others were shot Jan. 11, 1944.

When the German surrender in Italy was near, Mussolini tried to escape to Switzerland. He was captured April 28, 1945, by Italian partisans at Dongo, Lake Como, taken to the near-by village of Giuliano di Mezzegare, and there



shot after a 10 minutes' trial, together with his 25-year-old mistress Clara Petacci and 12 members of his "government" who had been trying to escape with him. His corpse and that of Clara Petacci were taken to Milan and hung heads downward in the Piazza Loreto. His body, buried in a secret unmarked grave in a Milan cemetery, was exhumed a year later by fanatical fascists. It was found in Aug. in the Carthusian monastery of Pavia and reburied secretly.

Thus ended Benito Mussolini, the *duce* once idolised by the Italian people and no negligible force in European affairs. Mussolini was a man in whom intelligence was misguided by ambition and vanity, imagination thwarted by his passions. His greatest error was perhaps that he deluded himself into believing that he could resurrect the glories of ancient Rome, although Italy was poor by comparison with those he made his enemies, whereas Rome had been wealthy. Whatever the value of the technical and industrial improvements he introduced into Italy in his earlier years, he left her ruined. His private life was one of notorious irregularities. Physically, he was short, but with a striking face and magnetic eyes; and although in his time of success inclined to corpulence, he liked to display great activity, riding, motoring, and piloting his own plane.

**Bibliography.** *Makers of Modern Italy*, J. A. R. Marriott, 1937; *Official Life of Mussolini*, G. Pini, tr. L. Villars, 1939; *One Man Alone*, M. H. H. Macartney, 1944; *Memoirs of Mussolini*, 1942-43, 1946; *Empty Balcony*, Piero Saporito, 1947.

**Mustagh-ata.** Mt. peak in the extreme W. of Sinkiang, China. An E. outlier of the Pamirs (*q.v.*) it reaches an alt. of 25,760 ft.

**Mustang** (Span. *mestrenco*, a strayer). Name applied to the wild horse found on the prairies of Mexico and California. They are not natives, but believed to be the descendants of horses introduced from Europe by the Spaniards at the time of their conquest in the 16th century. See *Horse*.

**Mustang.** Single-seat fighter aircraft designed by the North American Aviation co. in the

Second Great War. Moderately successful with the Allison engine on its introduction into squadron service in 1941, the Mustang was repowered with the British-designed Packard Merlin, and became an outstanding all-round fighter. The U.S. army, to whom the Mustang was known as the P-51, added to its effectiveness as a long-range escort by fitting drop tanks. Top speed of the Mustang without these tanks was 470 m.p.h. After the war came the P-82 Double Mustang, with two engines and two tail-carrying booms. See *Aeroplane* illus. p. 131.



Mustard. Foliage, flowers, and seedpods of charlock

**Mustard** (*Brassica*). Name given to annual herbs of the family Cruciferae. They are natives of Europe, Asia, and N. Africa. There are three British species known as mustards—black (*B. nigra*), wild mustard or charlock (*B. arvensis*), and white (*B. alba*). These are by some authors separated to constitute the genus *Sinapis*. They are bristly, branching plants from 1 ft. to 3 ft. in height, with variously lobed leaves and yellow flowers, and long rounded seed pods. In the black mustard these stand erect and close to the stem; the prefix has reference to the dark coloured seeds. In the other species the pods stand out from the stem, and the seeds, which in charlock are brown, are in white mustard yellow.

The salad mustard and cress consists of young plants of both species in the seed-leaf stage.

The standard for mustards was defined by an order issued in 1944. "Brown mustard flour" means the product obtained by grinding whole seeds of *B. nigra* or *B. juncea*, or a mixture of them. "White mustard flour" is defined as the product obtained by grinding whole seeds of *Sinapis alba*. The standard for mustard, compound mustard, or mustard condiment is specified in the schedule to the order as of such composition as to yield not less than 0.35 p.c. of allyl isothiocyanate after maceration with water for two hours at 37° C. If amylaceous flours and spices are used the proportion must not exceed 20 p.c. by weight.

**Mustard Gas.** The use of this asphyxiating chemical is described under *Chemical Warfare*.

**Mustard Oil.** An essential oil, a colourless liquid with a pungent smell, which causes a flow of tears and blisters the skin if allowed to remain on it for a short time. It is obtained from the seeds of black mustard, *Brassica nigra*, and contains a high proportion of allyl isothiocyanate. Artificial oil of mustard, obtained by heating allyl bromide in alcohol with potassium thiocyanate, is largely used in place of the natural oil.

**Mustelidae.** Family of carnivorous mammals, comprising the weasel tribe. It includes the weasels, martens, polecats, stoats, skunks, badgers, otters, etc.

**Muswell Hill.** Residential district of London. In the county of Middlesex, it lies to the N. of Highgate and the E. of Finchley. The name is derived from a well at the top of the hill, one of the low range running through the county. It is well served by rly. and other forms of London Transport. In the district is Alexandra Palace (*q.v.*), while many Scots have made their homes here.

**Muswell Hill Murder.** British murder case. On the morning of Feb. 14, 1896, Henry Smith was found lying dead in the kitchen of his house, Muswell Lodge, N. London, and from the safe £100 in gold was missing. In the kitchen was found a toy bull's-eye lantern, the property of the brother-in-law of one Albert Millsom. He and an associate, Henry Fowler, were missing, and also found to have been well supplied with money after the outrage. They were traced to Bath and captured after a struggle. Millsom made a statement putting the blame for the murder and the robbery on Fowler. While awaiting the jury's verdict, Fowler made an attack on Millsom in the dock and almost murdered him. Both men were hanged.

**Mut.** Egyptian goddess. Forming with her consort Amen-Ra and her son Khonsu the Theban triad, she had her chief temple S. of Karnak. Mistress of the sky, she appears in human form wearing a vulture head-dress and the double crown of Egypt. See *Karnak*.

**Mutation.** Term applied to the sudden appearance of a new character in a race of organisms. It was applied by de Vries at the end of the 18th century to new forms of *Oenothera lamarckiana* appearing on waste land near Amsterdam and subsequently among offspring of normal plants raised under controlled conditions. De Vries found the mutants (new forms) could pass their

peculiarities on. Because of this, and the marked differences between the mutants and their parents, he concluded that evolution occurs by sudden steps rather than by the slow accumulation of small differences suggested by Darwin.

Unexpected forms having markedly new characteristics have for long been known to horticulturists as sports; and the appearance of new characters is not uncommon in both plants and animals. Many such mutants are found to differ from the original stock in their chromosome complements, e.g. by the presence of extra members or even additional sets of chromosomes. Other mutants yield genetical evidence of a change having occurred in one or other of their genes, a change probably comparable to a change in chemical constitution and called a gene mutation. See Evolution.

**Mute** (Lat. *mutus*, dumb). Word used in several connotations. Primarily it denotes a person congenitally lacking the power of speech, or who has been deprived of it by long continued deafness, then called a deaf mute. (See Deafness.) The term is also applied to a person who, though able, refuses to speak, and specifically in law to one who "stands mute."

If a prisoner, called on to plead guilty or not guilty, makes no answer, a jury decides whether he is mute of malice or by visitation of God. If he is found mute of malice a plea of not guilty is entered and he is tried. If he is found mute by visitation of God the jury next decides whether he is fit to plead; if so, he may plead by signs or writing; if not, he may be detained during the king's pleasure.

An old funeral custom in Great Britain, now almost obsolete, was the presence of attendants supplied by the undertaker and called mutes. Wearing voluminous black cloaks and crepe bands hanging from their hats, they stood outside the door of the house from which the corpse was to be brought, holding staves tied up with large black bows and streamers. These figures were survivals from ancient Roman funeral ceremonial at which black-garbed officials, called *lictors*, attended the undertaker or master of the ceremonies, called *designator*, and marched with him beside the corpse to the place of burning or burial outside the city.

In music, mute is the name of a mechanical device for softening or deadening the sound of an instrument. For stringed instruments

of the violin family the apparatus is of wood or ivory, and is affixed to the bridge; while on instruments such as the piano it is a pad applied by a pedal arrangement. In brass instruments it takes the form of a leather pad inserted in the bell. The words *con sordina*, or *muta*, indicate when the mute is to be employed, and *senza sordini* when it is to be discontinued.

In philology, mute is the term applied to letters which are not pronounced, such as b in *dumb*, and to consonants whose sound is abruptly checked by complete closure of the vocal organs. Mutes are voiced—b, d, g—and unvoiced—p, t, k.

**Mutilation** (Lat. *mutilare*, to lop off). In anthropology, a bodily disfigurement effected under social sanction. Practised throughout human history, it is an artifice having an amuletic, ornamental, or useful purpose. It is prompted by self-consciousness, desire for social distinction, magico-religious or hygienic considerations, or inexplicable tradition, and is often attended by rigid ceremonial observances. Distinguishable from the penal disfigurement of slaves, captives, and criminals, and the austerities of religious ascetics, it is usually intended to attract, not to repel, ranking as a mode of personal enhancement or decoration.

**MUTILATION CUSTOMS.** Skin-mutilations include shaving and eradication of hair, even to the eyebrows, raising of scars by cutting or burning, often as tribal badges, and puncturing of designs by needle-tattooing, especially in E. Asia. Amulets may be embedded in artificial warts. Chinese ascetics affect elongated fingernails.

Finger-joint amputation, attested by Palaeolithic cave-drawings, is widely practised in aboriginal Australia and S. Africa for mourning; in Mysore as a birth-custom and later symbolically; in Tonga and Damaraland in time of sickness; and among the Mandan Indians as an initiation rite. The former foot-compression of high-born Chinese women may be compared with the deformity occasioned by high-heeled shoes in Western civilization. Constriction of the waist or limbs by irremovable rings or bands, and breast elongation occur. The Nilotic Lango in E. Uganda pierce the navel for brass rings and bead ornaments.

Head-deformation has been widely practised since Neolithic times. Polynesian noses are often flattened. The upper ears may

have 13 punctures, as in India, or the lobes be punctured and distended until they rest upon the shoulders, as in the Solomon Islands. Melanesian noses, S. American and Nyasaland lips, and Eskimo cheeks may be pierced for plugging. Bongo lips are distended, and Senegal lips artificially swollen. The tongue may be pierced, and some Saharan peoples excise the soft palate in infancy. Tooth-mutilation characterises chiefly the dark-skinned peoples. See Circumcision; Head-Deformation; Tooth-Mutilation.

**Mutiny** (Fr. *mutin*, rebellious). Collective insubordination of soldiers, sailors, or airmen. This offence is at all times punishable by death after conviction by court-martial. In Great Britain the Army Act provides for the redress of wrongs by enabling any officer or soldier as an individual to state his grievance to the Army Council, or to a general officer, but the combined complaint of several is never permissible. A soldier cannot be punished for availing himself of his privilege to complain, even if his complaint should be considered frivolous.

On the other hand, anything in the nature of a conspiracy to refuse service, or promote sedition, for any reason whatever, is deemed mutiny, and any person subject to military law who joins in it, or fails to use his utmost endeavours to suppress it, is culpable, even though the conspiracy should prove abortive. It should be noted that the term mutiny formerly included other acts of insubordination by a soldier, and thus the old Mutiny Act embraced most of the military offences now dealt with by the Army Act. The death penalty is hardly ever inflicted when refusal to obey an order is collective, or when the mutinous act is not performed in face of the enemy. See Army; Army Act; Mutiny Act.

**Mutiny Act.** Law originally passed in England in 1689 to punish insubordinate soldiers and deserters from the army by a military tribunal. The need for this became evident when 800 men who had enlisted to serve James II refused to embark for Holland at the bidding of William III. The duration of the Act was limited to seven months, but it was re-enacted every year with few intervals down to 1878, when its provisions were embodied in the Army Discipline and Regulation Act of 1879.

The Mutiny Act operated only in respect of troops at home, since articles of war were issued by the

crown to govern troops on active service or otherwise employed overseas. But in 1803 it became the legal authority for making articles of war, which had from Tudor times, and even earlier, been regarded solely as a prerogative of the crown, to be exercised only in time of war. As the law of the land could not be set aside in time of peace, the only help which parliament afforded the military authorities in maintaining discipline before 1689 was to make desertion punishable before a civil tribunal as a felony, apparently on the theory that a deserter had made away with a military equipment furnished at the cost of his captain. The Mutiny Act was therefore the beginning of legislation which recognized that the army in peace as in war required a special disciplinary code.

**Mutsu-hito** (1852-1912). Emperor of Japan. Born at Kyoto, Nov. 3, 1852, he succeeded his father, Osahito, in 1867, coming to the throne at a critical time in the history of Japan. The country had just been opened up to foreigners, and among the conservative element there was considerable discontent. Mutsu-hito favoured Western ideas and cleared the way for their introduction by various measures. He abolished the shogunate, and in 1869 moved his capital from Kyoto to Yeddo, which he renamed Tokyo. Railways were introduced in 1872, the European calendar came into force, and the study of English became general. Victorious wars with China, 1894, and Russia, 1904-05, strengthened his power, which was consolidated in 1910 by his alliance with Great Britain. He died in Tokyo, July 29, 1912. See Japan.

**Mutton** (late Lat. *multo*, sheep). Flesh of sheep. It contains less protein and more fat than beef. The breeds of sheep for mutton production include Lincoln, Leicester, Border Leicester, Scotch blackface, Shropshire, South Devon, and Welsh, together with crosses from these breeds. Immense quantities of frozen and chilled mutton are imported into Great Britain, especially from New Zealand and Australia. See Diet; Meat.

**Muttra**. District and town of India in Agra division, Uttar union. The dist. is situated on both sides of the Jumna and grows wheat, barley, millet, and gram. Three-quarters of the area is tilled, and one-quarter is irrigated, rainfall being only 25 ins. per annum. Area 1,447 sq. m. Pop. 806,992.

The town, the reputed birth-place of Krishna, is an ancient sacred city on the Jumna and an important rly. junction. It has been inhabited since 600 B.C., and in the Buddhist era contained 20 monasteries with 3,000 monks. Among the fine buildings, are the Jama Masjid, 1662, and the mosque of Aurangzebe, 1669. The Curzon museum of archaeology was opened in 1933. Pop. 76,716.

**Muybridge, EADWEARD** (1830-1904). British photographer. Born at Kingston-upon-Thames, his original name being Edward James Muggeridge, he emigrated to the U.S.A. and became director of photographic surveys. His first attempt at depicting motion by photography was in 1870, when he took a series of photographs of trotting horses and demonstrated that the conventional idea of trotting was incorrect. In 1881 he invented the zoopraxiscope, the forerunner of the cinematograph. He made photographs of animals in motion, upon which he published works which have become standard: *The Horse in Motion*, 1878; *Animal Locomotion*, 11 vols., 3rd ed. 1907; *The Human Figure in Motion*, 3rd ed. 1907. These works contain over 100,000 motion photographs. See Cinematography.

**Muzaffar-ed-Din** (1853-1907). Shah of Persia. Born March 25, 1853, he succeeded his father, Nasr-ed-Din. In 1896. His extravagant tastes forced him to raise loans from Russia, 1898-1900, thereby rousing suspicion of Russian motives in Great Britain.



Muzaffar-ed-Din,  
Shah of Persia

He visited St. Petersburg and Paris in 1900. In 1902 he was entertained in England by Edward VII, and received the order of the Garter. Continued maladministration and waste stirred up discontent until he was forced to grant a constitution in 1906. He died at Teheran, Jan. 8, 1907. See Persia: History.

**Muzaffargarh**. Dist. and town of Pakistan, in the Multan division of W. Punjab. The dist. is situated in the S., with the Indus on the W. and the Chenab and Panjnad on the E., and terminates at the confluence of the Indus and Panjnad. The annual rainfall is 6 ins. Wheat is grown upon irrigated or inundated land. The town stands on the right bank of the Chenab,

where the rly. crosses the river, and has grown round a fort built by Nawab Muzaffar Khan. Area, dist., 5,605 sq. m. Pop. dist., 712,849; town, 5,000.

**Muzaffarnagar**. District and town of India, in the Meerut division of the Uttar union. The dist. lies between the Ganges and Jumna N. of Meerut dist. Wheat and barley are the chief crops. The annual rainfall is 30 ins. The town is situated near the middle of the dist. and has rly. connexion with Meerut and Delhi. It was founded by Mazaffar Khan Khanjahan about 1633. Its area is 1,682 sq. m. Pop. dist., 1,056,759; town, 29,100.

**Muzaffarpur**. Dist. and town of India, in the Tirhut division of Bihar state. The dist. lies N. of the Ganges, and is mainly a flat alluvial plain drained by the Gandak rivers. Its area is 3,025 sq. m. The only limitation of human settlement is the marshes, most of which represent deserted river beds, for none of the rivers of the plain is here stable. Most of the district contains over 1,000 people per sq. m.; and about three-quarters of it is tilled. More than half the area yields two crops a year, chiefly rice and pulses. The town, built near a deserted bed of the Little Gandak river, is the divisional as well as the district headquarters, and a centre for the declining indigo industry. Pop. dist., 3,244,651; town, 54,009.

**Muzzle**. Properly and originally the snout, i.e. the jaw and mouth of an animal. It is also used by analogy for the mouth of a gun, and for the covering placed over the mouths of dogs or other animals to prevent them, when necessary, from eating or biting. See Muzzling Order.

**Muzzle Blast**. Term in ballistics (*q.v.*) to denote the rush of propellant gases past a projectile at the instant its base leaves the muzzle of a gun, rifle, or other firing-piece. About  $\frac{1}{3}$  of the total energy of the explosion when a round is fired in the breach is wasted in the form of muzzle blast;  $\frac{1}{3}$  is absorbed in heating the various parts of the weapon; and only  $\frac{1}{3}$  is kinetic energy which propels the projectile.

**Muzzle Energy**. Kinetic energy of the propulsion and rotation of a projectile at the instant it leaves the barrel of a firing-piece on discharge. The energy generated by the explosion of the charge in a Lee Enfield rifle is 7,312.5 ft.-lb., of which 2,333 ft.-lb. is muzzle energy.

**Muzzle Velocity.** Maximum velocity of a projectile during its flight from the firing-piece barrel to the target. This maximum is achieved not at the actual instant the projectile leaves the muzzle, but a few inches in front of it. Actual velocity at the muzzle is the sum of muzzle velocity and muzzle blast (*q.v.*) the latter being expended immediately the projectile clears the barrel. The M.V. of a rifle is 2,400 ft. per sec., and rapidly drops.

**Muzzling Order.** A measure adopted by public authority in various countries to stamp out rabies (*q.v.*). Although other animals are liable to the disease, dogs are its principal victims, and experience has shown that the best means of extinguishing it is compulsory muzzling within large districts, and the quarantining of all imported dogs, or absolute exclusion. In Great Britain the method was first tried systematically in 1897. In 1900 the order was rescinded, no case having occurred throughout the country for six months. In consequence of a recurrence of rabies in Cornwall and Devon, the muzzling order was reimposed for a time over certain districts in 1919.

**M.V.D.** Political police of the U.S.S.R., administered by the ministry of the interior, the Russian name for which is abbreviated to M.V.D. Earlier names of the organization, based on earlier names of the same govt. dept., were Cheka, OGPU, N.K.V.D. See OGPU.

**Mweru** or **MOERO.** Lake of Central Africa. It lies W. of Lake Tanganyika and between the Belgian Congo and N.E. Rhodesia. It is 68 m. long and has an average breadth of 24 m. It is fed by the Luapula river. To the E. of the lake is the Mweru Marsh game preserve, one of the chief breeding grounds of the elephant. The lake, which is navigated by steam launches, was discovered by Livingston in 1867. Marshes for 30 m. from the S. end indicate a greater extent in past years, and certain fish with amphibious habits, a relic of the Silurian period, attest the great geological age of the lake.

**Myall.** Australian tree, one of the acacias. There are two kinds, one of which resembles the weeping willow. Its wood is much used for making tobacco pipes and handles for whips.

**Myasthenia Gravis.** A rare disease of the muscles. It is characterised by extreme fatiguability, which goes on to paralysis. Muscles supplied by the cranial nerves

are most commonly affected. The cause is unknown, nor is the exact nature of the defect understood. Normal transmission of impulses from the motor nerves to the voluntary muscles seems to depend upon the liberation at the ending of the nerves of acetylcholine. In this condition that subtle chemical substance is probably not elaborated, or is even destroyed. The condition may terminate fatally in from one to three years, or may run on for 20 years. Specific treatment consists in giving physostigmine, the synthetic form of which is prostigmine; this effects a dramatic improvement for a few hours.

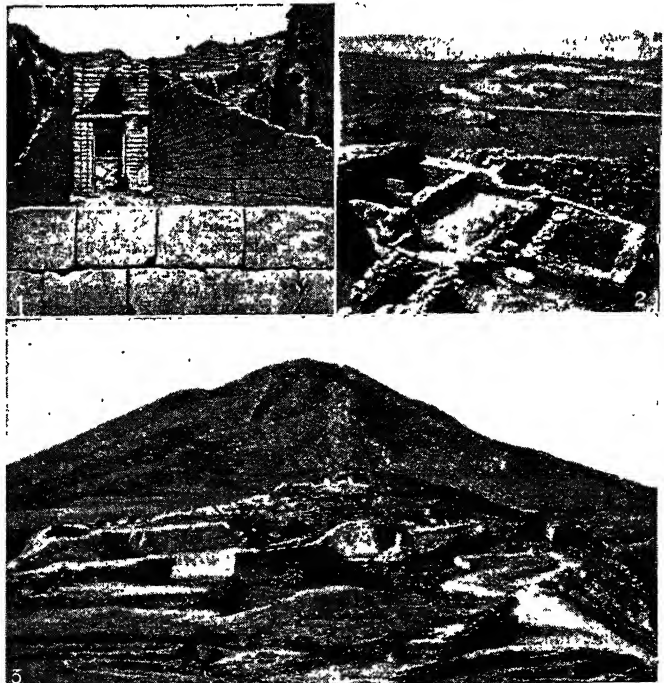
**Myaung-Mya.** District and town of Burma, in the Irawadi division. The dist. is on the W. side of the great delta, and has an annual rainfall of 100 ins. Rice is the only crop. The town is a progressive fishery and trading centre and small port. Area, 2,642 sq. m. Pop., dist., 488,031; town, 8,250.

**Mycalē.** Classical name of a mountain of Asiatic Turkey, now known as the Samsun Dag. Famous for the great naval victory the Greeks won over the Persians in its neighbourhood in 479 B.C.,

it stands on the W. coast, opposite the island of Samos. The battle ended Persian rule in Ionia.

**Mycelium.** Term used in botany for the branching system of fine threads which constitute the vegetative body of most fungi. The threads or hyphae have tubular non-living walls containing cytoplasm and nuclei. In basidiomycetes and the ascomycetes, partitions (septa) cross the hyphae at intervals separating the protoplast into parts which may contain one or several nuclei each according to the type of fungus. In phycomycetes, septa occur typically only to cut off reproductive organs and damaged or senile parts of the hyphae, which, of many soil fungi, grow adpressed in bundles (rhizomorphs).

**Mycenae.** Ancient Greek city of Argolis in Peloponnesus. It was the capital of Agememnon, overlord of the Achaeans of the Iliad. Its citadel or acropolis was occupied early in the Bronze age, and about 1600 B.C. it was ruled by a rich dynasty whose rock-hewn tombs, the famous shaft-graves, were excavated by Schliemann in 1876. They contained gold and silver ornaments, including gold masks, and arms,



Mycenae. Excavations in the ruins of the ancient Greek city. 1. Treasury of Clytemnestra. 2. Part of a large house, built about 1400 B.C. 3. General view from the west, with the famous Lion Gate in the distance

vases, and utensils. Mycenae was closely connected with Crete and commanded the trade route from the Aegean to northern lands. The quantity of Baltic amber found in its graves shows the widespread nature of its trade. Its greatest prosperity was reached about 1400, when it took the place of Cnossus as the leading Aegean power. The palace, the cyclopean walls of the Acropolis with their Lion Gate, and the domed tombs of beehive shape, chief among them the Treasury of Atreus, belong to this period.

The tradition of the siege of Troy, believed to have taken place about 1200, probably represents some great struggle of the final phase of the Mycenaean kingdom. The Iron age then began in Greece, and about 1000 the Dorian invaders arrived from the north. Mycenae fell and its palaces were burned, but the town lived on as a small city state, though Argos now held first place in the region. The Argives finally destroyed Mycenae in 468 B.C., after which it was virtually a ruin to be visited by Greek and Roman tourists. See Aegean Civilization.

**Mycetozoa** or **MYXOMYCETES**. Class of organisms variously regarded as low forms of animals (Protozoa), and as slime-fungi. They live in rotten wood, decaying leaves, and similar organic waste. Beginning life as microscopic spores, they rapidly become, in moisture, amoeba-like swarm-cells that glide through the decayed material, and feed upon bacteria by enveloping them in their jelly-like substance. They multiply in this stage by division; and later vast numbers unite into a cream-like mass (*plasmodium*) that flows out to the exterior of the leaf or tree-stump.

In the swarm-cell state they avoid the light, but the plasmodium is attracted to it. After a few hours of the flowing movements, the plasmodium invests itself in a firm crust, beneath which it breaks up into millions of microscopic spores again, lying among the meshes of a network of delicate threads (*capillitium*), some of the latter bearing knots of calcium carbonate. The spore-containing crust (*sporangia*) may be flat or cushion-shaped; or cylindrical or globular, mounted upon a stalk. These are the more interesting to observe: from the creamy plasmodium a number of hair-like growths extend vertically, and up these creeps a portion of the cream,

arranges itself as a cylinder or a globe, and then develops the hard crust, which may be black, brown,



**Mycetozoa.** Specimens of organisms occupying a doubtful position between the animal and vegetable worlds. Top, *Trichia botrytis*. Left centre, *Brefeldia maxima*, capillitium and spores. Right centre, *Mucilago spongiosa*. Bottom, *Stemonitis fusca*, flowing plasmodium

red, or yellow according to species. Some of these are of beautiful form.

Several hundred species are known from all but the driest and coldest parts of the earth, about 200 species being British. In certain phases of their life-history they appear to be animals, in others plants. The majority of naturalists follow De Bary, who declared them to be "outside the pale of botany." See Protozoa; consult Monograph of the Mycetozoa, A. Lister, 1911.

**Mycology** (Gr. *mykēs*, fungus; *logos*, discourse). Department of botany dealing with fungi. See Fungus; Mould. For the three great divisions of the fungi see Ascomycetes; Basidiomycetes; Phycomycetes. For the drugs produced by fungi see Ergot; Penicillin.

**Mycorrhiza**. Originally structures formed by the association of the mycelium of a fungus and the root of a higher plant. Other organs were later found to have fungus associates and the meaning was extended to include all such, except when algae are concerned.

Two types of mycorrhiza are commonly distinguished: ectotrophic, in which the fungus is outside the higher plant tissues; and endotrophic, in which the fungus is to be found largely within the higher plant. The

former is the type associated with forest trees. The association probably arises as an attempt by the fungus to parasitize the tree and under unfavourable conditions the roots suffer damage. From the fact that the fructifications of certain fungi usually appear under certain trees, e.g. *Amanita muscaria* under birch; *Russula fragilis* and *Boletus badius* in pine woods, it would seem possible that they cannot be formed unless association with a suitable root has been established. Sometimes the tree may benefit from the association, as a result of the fungus passing on water, salts, and even organic matter absorbed from the soil.

Endotrophic mycorrhiza is common in herbaceous plants. Fungus hyphae occur casually in the roots of many perennial flowering plants and vascular cryptogams. They grow parasitically in the outer tissues. Deeper in, their progress seems to be arrested and branched tufts of hyphae are formed which are later digested by the host cells to leave rounded residues. With many orchids, Ericaceous plants, and prothalli of Lycopodium, to name a few examples, the mycorrhizal association is undoubtedly mutually advantageous. The fungus has access to the carbohydrates synthesised by the green plant, and it may pay for them with nitrogenous material derived from the soil or alternatively made by itself, for Phoma is known capable of fixing atmospheric nitrogen (see Nitrogen Cycle). Nevertheless the association is delicately balanced. Should the fungus be too vigorous it kills the seedlings: if the fungus is weakened as occurs in chalky soils, it dies and so, for want of it, does the host. The non-green Japanese orchid, *Gastroidea elata* exhibits dependence on *Armillaria mellea* in such an extreme manner that it can only be considered as parasitic on this fungus. The orchid has a tuberous rhizome as its only vegetative organ. This produces new tubers at the ends of its branches. When isolated from the fungus the orchid fails to flower, its new tubers are successively smaller until too weak to produce a new crop, and the plant dies.



Sir Hugh Myddelton, English capitalist

**Myddelton**, SIR HUGH (c.1560-1631). English capit-



alist. Born at Galch Hill, Denbigh, he came to London and became a goldsmith and banker in Basinghall Street. Profitable ventures in the New World enabled him to contract with the corporation of London for making a river to supply the city with water from Ware, 1609. This he successfully executed, but nearly ruined himself in the undertaking. The New River was opened in 1613, and Myddelton was made a baronet in 1622. M.P. for his native county 1603-28, he died Dec. 10, 1631.

**Mydriatics.** Drugs causing the pupil of the eye to dilate. Those most often used are atropine and homatropine. Drugs which contract the pupil are called myotics.

**Myelitis** (Gr. *myelos*, marrow). Inflammation of the spinal cord. Acute myelitis may be due to exposure to cold and wet, fracture or injury of the spine, or may be a complication of severe infectious diseases, such as typhus and smallpox. The condition may also arise from extension of disease of the vertebrae, such as caries, or occur in the course of syphilis. The onset of acute diffuse myelitis may be marked by rigors and rise of temperature. Paralysis rapidly develops, first in the legs, and in the arms, if the upper part of the cord becomes involved. The muscles waste rapidly, and delirium and high fever terminate in death. In the variety of the disease known as poliomyelitis (infantile paralysis), nerve cells in the grey matter of the cord are destroyed. Treatment resembles that for meningitis (*q.v.*). When the condition is chronic, massage and electricity may improve the tone of muscles.

**Myers, CHARLES SAMUEL** (1873-1946). British psychologist. Born March 13, 1873, he attended the City of London school; Caius College, Cambridge; and St. Bartholomew's hospital. During 1906-09 he was professor of psychology at King's College, London. It is largely due to Myers's insistence that the study of individual psychology is recognized as important in the smooth conduct of businesses and the armed forces. He was consulting psychologist to British armies in France during the First Great War; and when the committee on personnel selection was set up by the War office in the Second Great War he was at once appointed. Created C.B.E. in 1919, Myers died Oct. 12, 1946. He wrote *Business Rationalisation*, 1932; *A Psychologist's Point of View*, 1933; *Shell Shock* in France, 1914-18, 1940.

**Myers, FREDERIC WILLIAM HENRY** (1843-1901). British man of letters. He was born, Feb. 6, 1843, at Keswick, and educated at Cheltenham and Trinity, Cambridge. In 1872 he became an inspector of schools. Of his poems *The Renewal of Youth*, 1882, is probably his finest effort. Later he became interested in spiritualistic phenomena, and was an original member of the Society for Psychical Research. The results of his psychic studies are embodied notably in *Human Personality and its Survival of Bodily Death*, 1903. Myers died in Rome, Jan. 17, 1901. Before he died he agreed to make every effort to communicate with friends after death, and it is claimed that he did so.

**Myingyan.** Dist. and town of Burma, in the Meiktila division. The dist. is situated on the left bank within the curve of the Irawadi and N.E. of the Pegu Mts. Oilseeds are the chief crop. The town is a rly. terminus on the left bank of the Irawadi. In Japanese occupation since 1942. Myingyan was recaptured March 22, 1945, during the operations which cleared the Meiktila area. Area of dist., 3,107 sq. m. Pop. dist., 539,057; town, 28,700.

**Myitkyina.** District and town of the Kachin state, Burma. The town is situated on the upper Irawadi more than 250 m. N.N.E. of Mandalay, with which it is connected by rly., being a terminus on the right bank of the Irawadi, of which it is the limit of navigation. Myitkyina was occupied by Japanese forces on May 8, 1942, after its evacuation by Chinese troops. On May 17, 1944, American and Chinese troops, seized Myitkyina airfield and part of the town, but withdrew in the night from the latter. Although isolated, the Japanese in Myitkyina held out until Aug. 4. By the fall of Myitkyina the invaders lost their last important base in Upper Burma. Area of dist., 10,977 sq. m. Pop. dist., 298,323; town, 20,000. *Pron.* Mitchi-nah.

**Myllita.** Goddess of Babylonian mythology, associated with love and fruitfulness. Herodotus records that her worship claimed special rites from every woman at some time in her life.

**Mylius Erichsen Land.** That part of N. Greenland lying S. of Heilprin Land, E. of Peary Land, and bounded N. and E. by Wandel Bay and Denmark Fjord, in lat. 80° to 82° N. It was named after the Danish explorer who penetrated here in 1906.

**Mylonite.** In geology, a rock which has been crushed by earth movements so as to lose its original structure. Intense crushing may have resulted in the mylonite becoming fused by heat. Typical examples are found on the Moine Thrust (*q.v.*) in N.W. Scotland.

**Mymensingh, MAIMANSINGH, OR NASTIRABAD.** Town in the Mymensingh dist. of E. Bengal, Pakistan. On the right bank of the old channel of the Brahmaputra, it is a centre for traffic on the river in rice and jute. It has connexion by rly. with Dacca and Chittagong. Pop. 22,000.

**Mynn, ALFRED** (1807-61). English cricketer. Born at Goudhurst, Kent, Jan. 19, 1807, he joined the



Alfred Mynn,  
English cricketer

Harrietsham cricket club in 1825. He played at Lord's in 1832, and became one of the chief performers in the country. A stalwart of the Gentlemen, he helped in their victories over

the Players between 1840-50, and played regularly for Kent almost up to his death on Nov. 1, 1861. As a fast round-arm bowler Mynn had no equal.

**Mynyddislwyn.** Urban dist. of Monmouthshire, England. It is 8 m. S.W. of Pontypool, and stands on the coalfield, its industries including the making of furniture and electric switch gear. There are quarries in the neighbourhood. Pop. 15,000.

**Myocarditis** (Gr. *mys*, muscle; *kardia*, heart). Inflammation of the muscle substance of the heart associated with rheumatism, influenza, and fevers. *See* Heart.

**Myopia** (Gr. *myops*, short sighted). Short sight. It is an error of refraction most commonly due to abnormal elongation of the eyeball, with the result that parallel rays are brought to focus in front of the retina, and vision is accordingly indistinct. Only divergent rays are focused on the retina, and in consequence short-sighted persons find it necessary to hold an object closer to the eye than do normal persons. The error of refraction can be adjusted by wearing specially corrected spectacles or contact lenses fitted to bear directly against the eyeball. *See* Eye.

**Myosin.** Proteid produced by muscle plasma after death. The plasma separates into a serum and

a clot, the latter being myosin. It is this occurrence in the muscles of the body after death that causes the phenomenon known as rigor mortis (*q.v.*). Myosin is contained in brine used for pickling meat, and prepared from flesh after removing albuminoids.

**Myriapoda.** Class of the Arthropoda, which includes the centipedes and millipedes. They have long, segmented, cylindrical, or flattened bodies, and each segment is provided with paired limbs. The animals are noted for the great number of their legs. A great number of species are distributed over the tropical and temperate regions of the world. Great Britain has several, all small and harmless.



### Myricaceae.

Small family of shrubs and trees. Natives of Europe, Asia, S. Africa, and N. America, they have alternate and undivided leaves, often covered with a wax-secreting down. The male and female flowers are distinct, in separate spikes, and without sepals or petals; the males consisting merely of stamens, and the females of the one-celled ovary and two thread-like styles. The fruit is compressed on two sides, and contains a single-seeded stone. The species yield fragrant wax, benzoic acid, and tannin. See Sweet Gale.

**Myrmidons.** In Greek legend, the Thessalian tribe of which Achilles was king. Achilles brought them to Troy, and withdrew them from the fighting when he quarrelled with Agamemnon. Their unqualified devotion to Achilles has caused the term myrmidon to express unquestioning obedience.

**Myrobalan** (*Phyllanthus emblica*). A tree of the family Euphorbiaceae, a native of India and Malaya. Its alternate leaves are slender and arranged in two ranks along the twigs. The small green flowers have the sexes separate and are clustered. The small, acid, fleshy fruit contains a hard nut with six seeds. Fruits are eaten raw, or preserved with sugar as a sweetmeat, while bark is used in tanning and dyeing. The wood is hard and damp-resisting.



Myrobalan Plum. Spray of foliage and fruit. Inset, single flowers

**Myrobalan Plum or CHERRY PLUM** (*Prunus cerasifera*). Shrub of the family Rosaceae. Its native region is uncertain, but is probably the Caucasus. The branches are not spiny; the leaves are elliptical, the flowers white, and the fruit round and red, with yellow flesh. This shrub is much used for making hedges.

**Myron** (fl. 5th century B.C.). Greek sculptor. Born at Eleutherae in Boeotia, he was a pupil of Ageladas of Argos. Specially known as a worker in bronze, he chose for subjects athletes and animals. His chief characteristics were truthfulness to nature, and active rather than passive representation. His most famous works were the Discobolus, Ladas the Runner, a Satyr (probably Marsyas), and a bronze cow. The last was remarkable for epigrams inscribed upon the animal's body after the manner of the so-called statue of Pasquino at Rome. See Discobolus illus.; Greek Art; Pasquinade.

**Myrrh.** Gum resin obtained from the stem of *Commiphora myrrha*. This is a small tree with whitish-grey bark, from which the myrrh escapes in yellow oily drops, darkening in colour as they harden. The main sources of myrrh are Somaliland and Arabia, where it is gathered by natives and placed in goatskins which are brought down to the coast for shipment. The gum resin consists of a mixture of resin, gum, and from 3 to 8 p.c. of a volatile oil. The most important

medical use of myrrh today is as an aromatic stimulant mouthwash.

Myrrh was used in the East as a perfume and for embalming. It was one of the gifts made by the magi to the child Jesus Christ, and on this account the custom exists of offering gold, frankincense, and myrrh every year on the feast of the Epiphany. The offering is made on behalf of the British sovereign in the Chapel Royal, London. See Frankincense; Magi. *Pron. mer.*

**Myrtaceae.** Family of trees and shrubs, mostly natives of the tropical regions. They have undivided leaves, and flowers with four- or five-parted calyx and four or five petals. This vast family includes over 90 genera and about 2,800 species. Among well-known genera are *Eucalyptus* and *Myrtus*, of which the well-known myrtle (*M. communis*) of S. Europe serves as a type.

**Myrtle** (*Myrtus communis*). Evergreen shrub of the above family Myrtaceae, native of W. Asia, but long naturalised in S. Europe, whence it was introduced to Great Britain in 1597. It grows to a height of 10 ft., has shining oval opposite leaves, and fragrant white flowers largely used in perfumery. The purple berries also are fragrant; they are sweet and have a strong aromatic flavour. In the extreme S. of England the myrtle is hardy and can be grown out of doors; elsewhere it needs protection in winter. It may be grown from seeds or cuttings, taken in early summer, and grown in a compost of sandy loam and leaf-mould. Myrtle wreaths were used among the ancients to crown the victors in athletic games.

**Mysia.** Ancient country of Asia Minor. Lying between the Aegean Sea, Propontis, Bithynia, and Lydia, it sometimes included the Troad.

The Mysi first appear in history when Mysia came under Croesus, king of Lydia, in the 6th century B.C. With the overthrow of the latter by the Persians, Mysia became part of the Persian empire, and after the death of Alexander the Great in 323 B.C., part of the kingdom of Syria. In 133 the country became part of the Roman empire.

**Mysore.** Indian state. It is roughly a triangle on the Deccan plateau, with Bombay on the N.W., Coorg on the S.W., and Madras on



Myrtle. Foliage and flower spray of the evergreen shrub

other sides. On the average 2,000 ft. alt., high hills, called droogs, rise in isolation from the plain; a ridge across the middle of the state separates the drainage of the Kistna from that of the Cauvery. Much land is irrigated from the Cauvery; the chief crop is ragi, a native millet; other crops are cotton, sugar cane, and rice. Gold is mined at Kolar and manganese in Shimoga; the gold output has been valued at over £2,000,000 a year, and industry has been advanced by hydro-electric installations. Mysore city is the capital, but Bangalore is a more populous town. There is splendid scenery and a healthy climate.

From 1760 to 1799 the state was ruled by a Mahomedan usurper, Haider Ali and his son Tippoo. The British restored the former Hindu dynasty in 1799, took over the administration 1831-81, and set up a Hindu maharaja. Efficient administration has gained for Mysore the name of the model state. At the partition of 1947 it acceded to India. Area 29,458 sq. m. Pop. 7,329,140. See Madras.

**Mysore.** Capital of Mysore state. It is situated near the Cauvery, 100 m. S.W. of Bangalore, with which it is connected by rly. There are numerous modern buildings, including the Victoria jubilee institute and the palace of the maharaja. S.E. of the city is temple-crowned Chamundi Hill, 3,489 ft., with a colossal recumbent figure of the sacred bull Nandi. The city was the capital from early times until 1610. It was then superseded by Seringapatam until 1799, when the court again moved to Mysore. Pop. 150,540.

**Mystagogue.** Official charged with important duties in the celebration of the Eleusinian mysteries (*q.v.*). These *mystagogoi* were licensed by the state.

**Mystery** (Gr. *initiation*). Secret rite. The Greek word *mysteria* denoted rites performed in the presence of persons prepared by gradual initiation, under a bond of secrecy. They probably grew out of primitive ceremonial dances associated with the pre-Hellenic

nature-worship of Thrace. Their chief centre was at Eleusis (*q.v.*).

A second group, perhaps Pelasgian, seems to have spread from Thrace to Lemnos and Boeotian Thebes. These mysteries were concerned with the deified shades called Cabiri, and included the ritual slaying of an animal victim. At Andania in Messenia the mysteries combined the veneration of Demeter with that of the Cabiri. These Cabirian rituals were often confused with two others, those of the Cretan Curetes, which were essentially puberty rites, and those of the Phrygian Corybantes, which were ceremonial dances symbolising death and burial as magical incentives to fertility.

A third group was concerned with Orpheus, himself perhaps of Thracian birth. With his veneration Greece associated the refinements of melody and poetry. In these Orphic mysteries the

with those of the Persian Mithras. All of them were for centuries engaged in a life-and-death struggle with the Christian faith.

In the N.T. the word *mystery*, as used by S. Paul, denoted the Divine plan, and there is reason to doubt whether the apostle referred directly to, or was personally familiar with, any of the mystery-



Mysore, South India. The principal entrance to the Maharaja's palace, one of the city's modern buildings. Top, the recumbent figure of Nandi, the sacred bull, on the top of Chamundi Hill

By courtesy of the High Commissioner for India

idea of recurrent death and resurrection was symbolised, Orpheus himself being in some degree considered as the founder and origin of all mysteries: and the ritual phenomena bore relationships to those which centred about the Egyptian worship of Isis and Serapis, and the Phrygian worship of Attis and Cybele. At the beginning of our era these mysteries were practised throughout the Greco-Roman world by the private members of secret societies, side by side

religions of his time. In a later age the early Fathers began to draw comparisons between Christian and pagan mysteries. But the resemblances with Christian practice observable in the later forms of the oriental cults prevalent in the Roman world, notably those of Isis and Mithras, are mainly explicable as imitations and not precursors of Christian institutions.

The religious mysteries already discussed are a special development of a social institution of widespread occurrence, and arose out of the emotional life of settled agricultural peoples. The main elements—purification, offering, procession, song, dance, drama, secret formula, and mechanical accessories—are so universal that these rituals must be deemed to have their roots in Neolithic culture. They sometimes occur as modes of admission into general society, as with primitive puberty-rites, and sometimes as devices for securing the local or specialised interests of artificial social groups. Thus the daubing of initiates with clay, characteristic of some Greek mysteries, is still practised in W. Africa, Guiana, Australia, Melanesia, and the Andamans, while the scope of the mystic bull-roarer (*q.v.*) is wider still. See Eleusinia;

Freemasonry; Initiation; consult St. Paul and the Mystery-Religions, H. A. A. Kennedy, 1913.

E. G. Harmer

**Mystery of Edwin Drood.** THE. Unfinished novel by Charles Dickens. It was to have been published first in twelve monthly parts, illustrated by S. Luke Fildes, but the author died, June 9, 1870, before completing the writing of the sixth part. The fragment was published in book form the same year, and is usually included in collected editions of the author's works, especially as it contains some of his most powerful and mature descriptive writing. So far as it stands, the story concerns the disappearance of young Edwin Drood, presumably murdered by his uncle John Jasper. Most of the action takes place in and near the cathedral precincts of Rochester, thinly disguised as Cloisterham, and the cathedral crypt and tower both appear to have been intended to figure prominently in the completed plot. Other scenes are laid in Staple Inn, London, and in an East-end opium den. The question of how the story was to end has aroused continuous controversy, and there are many opposing theories (see Drood Controversy). There have been several attempts to complete the book, also more than one stage version, notably that by J. Comyns Carr, presented by Tree in 1908. A film version (American) was shown in 1935.

**Mystery Play.** Type of religious drama in medieval Europe. It was so called either as representing mysteries of the faith, or more probably as being a ministry or craft. Medieval plays with biblical subjects are commonly called mysteries. The medieval drama was evolved from religious ritual. To the recitation of sacred narratives and antiphonal singing were added at the great church festivals quasi-dramatic dialogues and symbolical acts. By the 12th century the clergy and choirs performed dramas in French churches.

From the churches the dramas were transferred to the churchyards and to open spaces in towns, and when in 1210 the clergy were forbidden to act except in churches the performances were given by laymen. A great impetus was given to the movement by the institution in 1311 of the Corpus Christi festival on the Thursday after Trinity. The guilds in English and continental towns collaborated in producing cycles of plays representing sacred events from the

Creation to Doomsday. Comic relief was provided by Noah's wife, the shepherds of Bethlehem, and other stock characters.

Of the extant English cycles, the oldest are those of Chester (24 plays) and York (48), dating from about 1350. The 32 so-called Towneley mysteries were probably acted at or near Wakefield. The 42 Coventry plays seem to have been written for monks or friars. Some mystery plays in the Cornish language are also preserved. The religious drama lingered in England until the end of the 16th century.

In many continental countries examples of mystery plays abound. In Paris the representations were restricted to the confraternity of the Passion. The Scandinavian reformers encouraged the art, which was widely practised in Germany until its prohibition by the archbishop of Salzburg in 1779 was followed by that of other prelates of the empire, the inhabitants of Oberammergau alone obtaining permission to perform a passion play. Similar dramas are still acted in Spain, and at Bruges and Furnes in Belgium. See Drama; Miracle Play; Oberammergau.

**Mysticism** (Gr. *myein*, to close the eyes). Term originally used in connexion with the Greek mysteries. A mystic was one who had been initiated into the esoteric knowledge of divine things which the mysteries imparted to their converts. The word is now used in different senses, but in its technical meaning has been defined by Dean Inge as "the attempt to realize the presence of the living God in the soul and in nature, or more generally as the attempt to realize in thought and feeling the immanence of the temporal in the eternal and the eternal in the temporal." All mystics claim the power of immediate approach to God without the aid of external means.

Traces of mysticism are to be found in most religions. The spirit of mysticism has left its mark upon the Upanishads and the Hindu philosophical schools. In Islam it appears in Sufism. In Greece its origin may be traced to Plato, though its development was due to oriental influences connected with the Greek mysteries; it reached its climax in Neo-Platonism, especially in the writings of Plotinus.

Christianity has always been a favourable soil for the growth of mysticism. There are mystic elements in the N.T., particularly in the Johannine and Pauline litera-

ture. It was not, however, till the 5th century that the movement assumed large proportions. The writings of Pseudo-Dionysius are an attempt to transform Christianity under the influence of Neo-Platonism into mysticism pure and simple, and exercised a remarkable influence on Christian thought for several centuries.

The golden age of Christian mysticism falls within the period 1250-1500. It originated in a Pantheistic society which flourished in the 13th and 14th centuries, known as The Brethren of the Free Spirit. The watchword of this society was "All that is is God"; man and God were therefore always in intimate association: in fact, it was hardly possible to distinguish between them. Out of this society came Meister Eckhart (1260-1329) one of the most remarkable of the German mystics. Eckhart's creed is pronouncedly pantheistic. "God is not the highest being," he says, for "he is the only being. Outside of God there is nothing but illusion and deception." Gradually mysticism separated itself from pantheism owing largely to the influence of John Ruysbroek (1293-1381), who has been called "the patriarch of the German mystics."

But the most influential mystic was John Tauler (1290-1361), who succeeded in severing mysticism from all its pantheistic connexions, and bringing it into line with orthodox Christianity. Hitherto mysticism had been largely contemplative, and had shunned the practical life. Tauler showed that it was worthless unless it issued in consecration of character and life. Two societies were founded in Germany to popularise mysticism: (1) The Friends of God; (2) The Brethren of the Common Lot; both instrumental in preparing the way for the Reformation.

Thomas à Kempis was connected with the latter society, and though the Imitatio Christi cannot perhaps be called mystical in the technical sense of the term, it was written under the spell of the teaching of the mystics. Another product of the same school of thought was the Theologia Germanica, a book which had a unique influence at the time, and did almost as much as the Imitatio Christi for the recovery of spiritual religion in Germany. In the 16th century there was a powerful resurgence of mysticism in Roman Catholicism, particularly in Spain. The chief leaders of the movement were

S. Teresa, S. Juan, and Molinos, who carried to completion the work of S. Catherine of Siena. S. Catherine is the heroine of Baron von Hügel's book on mysticism, and his delineation of her character is the best exposition of the part which mysticism played in the devotional life of a devout and orthodox R.C. In France, mysticism found expression in the writings of Fénelon, Bossuet, Madame Guyon, and in Jansenism.

Roman Catholicism has always been more favourable to mysticism than has Protestantism, though the latter has by no means been untouched by its spirit. Boehme was the first great Protestant representative and from his writings William Law introduced mysticism into the English Church. It cannot be said to have been a power in English life, though it found strong advocates in the Cambridge Platonists. Quakerism, with its doctrine of the Inner Light, and Methodism with its insistence on the need of personal assurance of salvation, have points of affinity with mysticism, but the movement has never gripped the soul of England.

H. T. Andrews

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**Mytens, DANIEL** (c. 1590–1642). Dutch painter, born at The Hague. He was influenced by

Miereveldt and Rubens, came to London, and was painter to Charles I, 1625–34. After Van Dyck's arrival he returned to Holland. His best works



Daniel Mytens,  
Dutch painter  
After Van Dyck

include Hudson, the Dwarf, with a dog in St. James's; Charles Howard, Earl of Nottingham, at Hampton Court; Charles I and Henrietta Maria, in Buckingham Palace.

**Mythology.** The sacred stories of the various peoples of the world. Of these stories some relate to the Creation, and to divine or superhuman beings, their genealogies, activities, and adventures, whether they are believed to have originated the world, or mankind, or a particular tribe, rank, or family, or to superintend or take part in its

government, to be concerned in its well-being, to be hostile to it, or to lead a life of their own more or less apart from mortals.

Other stories relate to saints or heroes who have championed mankind or conferred benefits, who have undergone sufferings, made discoveries or inventions, or moulded the earth or its inhabitants into their present form. Among such stories are included those of the origin of death, the gift of fire, the deluge, the origin of beast and bird and tree, or their peculiarities, the organization of society, and of various institutions and customs. Many stories are aetiological, i.e. are told for the purpose of explaining these and other things; many, on the other hand, simply narrate what passes with an uncultured or half-cultured people for history. They are often connected with the worship of the gods, are told to explain the festivals, the ceremonies, the forms of their images, the position and furniture of their temples. In a word, they are sacred.

#### Myths Believed True

Unlike some non-sacred tales they are told as true, and wild and repulsive or impossible as they may be, they are or were once believed as facts. Another characteristic frequently, but not universally, present is that they are told only under special conditions, or at a certain time of year, or in connexion with certain rites, or to certain classes of persons, as the initiates into a cult or mystery. The scientific collection and criticism of these stories is called the science of mythology.

Myths take their rise low down in culture. The people has not yet been discovered so savage as to be destitute of myths. As culture advances, one incident after another becomes incredible to the growing intelligence, or repugnant to the more refined manners and morality of the community, but the old stories are still piously repeated by the backward classes or the priests of the local shrines. Again, the myths deemed derogatory to the divinities are denounced as lies or are interpreted as parables.

All these methods were tried in Greece. From Theagenes of Rhegium, and Metrodorus, in the 6th century B.C., down to Porphyry, and the latest age of paganism, the interpretation of the gods as physical phenomena was a favourite teaching. The 19th century explanation that myths are a disease of language, that seeks their explanation in questionable

etymologies and blunders of meaning, was anticipated by Plato.

Ultimately Christianity was victorious over paganism throughout the Roman empire. The official theory of the conquerors was that the heathen divinities were devils, and their stories lies, or a mere parody of the facts preserved in Holy Writ. At the revival of learning the cudgels were taken up by learned men on behalf of the Greek mythology. In fact, even during the Middle Ages, when the gods of the heathen had ceased to be serious competitors for belief with the denizens of the Christian Olympus, the theory that they were devils proportionately weakened, and men reverted to the explanation that their stories were parables, an explanation exploited for the purpose of Christian instruction in the *Gesta Romanorum* and other collections of tales. Bacon in *The Wisdom of the Ancients* after the Reformation attempted to revive this method of exposition; but its difficulties were such that no two interpreters agreed on the same explanation. More recently the Euhemeristic theory has been taken up by Herbert Spencer and Grant Allen. It is relevant to observe that, if every divinity were resolved into the shade of a human being, the problem of the origin and meaning of the mythical tales told everywhere on all sorts of themes would remain as puzzling as ever.

#### Philological Basis of Myths

The adherents of another school influential in the 19th century sought the answer to the question from philology. From Germany this method of interpretation spread wherever learned men expounded philology. In England Max Müller laid down "that the best solvent of the old riddles of mythology is to be found in an etymological analysis of the names of gods and goddesses, heroes, and heroines." Accordingly, he set himself to investigate and interpret the names. Philology as a scientific study was the result of acquaintance with Sanskrit, the eldest of the family of Aryan tongues, and in the *Rigveda*, the earliest Sanskrit literature, the philological school of mythologists thought they had found the explanation of the names and activities of the Aryan gods and the meaning of Aryan mythology.

Taking the *Rigveda* as his starting-point, Max Müller tells us: "The beginning of mythology came from a poetical and philosophical conception of nature and



its most prominent phenomena: or, if poetry and philosophy combined may claim the name of religion, from a religious conception of the universe."

There are other elements taken up into it as it developed, but this is the beginning, the foundation. It is discovered by an examination of the names and epithets of the gods and of the deeds ascribed to them, and then by equating the names with names of gods and other words in the sister tongues. Many of these equations are contested; The greater number are quite uncertain.

When the *veda* was carefully examined, the myths were practicably resolvable into two: that of

and Hindu myths were phenomena common to savage myths everywhere, and that they arose out of a condition of mind known to exist everywhere among savages. Andrew Lang recognizes two elements in all mythologies—"the factor we now regard as rational, and that which we moderns regard as irrational."

The savage and the ancestors of civilized people were on a par, which means that the ancestors of civilized people were once savages, as even the Greeks admitted. They endowed all external things with their own self-consciousness. The lower animals, trees, rocks, differed from men only in shape, save that they were often

vastly stronger and cleverer. The savage knew not the bounds of this cleverness; he had no standard save imagination and fear by which to measure it. Naturally his belief extended to the grotesque and the impossible. Shape-shifting was accepted as a matter of course. The super-human personages of his imagination wore the shape of beasts, either permanently or at will.

In the lower culture everywhere many men believe themselves possessed of extraordinary powers; and all men, if

they do not believe it of themselves, believe it of some. Nay, they believe that, if not themselves magicians, at least they can by means of word and rite appropriate and exercise many extraordinary powers; they can work their will by spell or amulet. The gods and heroes are endowed with the passions of men, with the powers attributed to at all events some men; but both passions and powers are idealised and magnified indefinitely.

Not that these are the sole elements of which myths are made. They are merely the groundwork of mythology—they, and not hyperboles of poets, disease of language, misinterpretation of current expressions. Such causes play their part, but it is a small one. Other subordinate causes are distorted or imperfect recollections of facts,

the cluster of traditions about a great name, the complications of organized society, and the abiding aetiological impulse which we strive laboriously to satisfy by methodical scientific inquiry, but which in that child-like condition is stayed by a tale.

Lang's work had an immediate and profound effect. In Great Britain the philological theory of mythology was killed. The anthropological method, which explains mythology not by a disease of language, but by the universal characteristics of the mental condition of the lower culture, was accepted thenceforward by all serious students of the subject.

E. S. Hartland, LL.D.

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**Mytton, JOHN** (1796-1834). English sportsman and eccentric. Born Sept. 30, 1796, he was educated at Westminster, and became a cornet in the 7th Hussars in 1816. He left the army next year and devoted his life to sport, particularly racing, hunting and shooting. A man of great strength and reckless courage, he drove a tandem across country for a wager one night, negotiating a deep drain, a sunken fence, and two quickset hedges. After squandering a vast fortune, all his effects were sold by creditors, and "Squire" Mytton died in the king's bench prison, March 29, 1834.

**Myxoedema** (Gr. *myxa*, mucus; *oedema*, swelling). Disorder due to diminution, loss of function, or toxæmia, of the thyroid gland (*q.v.*); more common among women than men. The patient becomes sluggish, lethargic, with coarsening of the hair and skin, and mucoid infiltration of the subcutaneous tissues. Failure of memory and sensitivity to cold are symptoms. A cure consists in the administration of thyroid extract.

**Myzostoma.** Small worm which occurs as an external parasite on various Crinoidea (*q.v.*). It is a disk-shaped animal without any trace of external segmentation and is usually classified in a family, Myzostomidae, of the phylum Annelida.

# GREGO-ROMAN MYTHOLOGY: PRINCIPAL DEITIES

Greek Name	Roman Name	Description
Zeus	Jupiter	Chief of the gods
Hera	Juno	Chief goddess, wife of the above
Pluto	Dis	God of the underworld
Persephone	Proserpine	Queen of the underworld; also goddess of spring
Athena	Minerva	Goddess of wisdom
Apollon	Apollo	Sun god; also god of music and poetry
Artemis	Diana	Moon goddess; also goddess of the chase
Ares	Mars	God of war
Poseidon	Neptune	God of the sea
Hephaistos	Vulcan	Fire god
Aphrodite	Venus	Goddess of love and beauty
Demeter	Ceres	Goddess of the earth or harvest
Hestia	Vesta	Goddess of home
Hermes	Mercury	Messenger of the gods
Eros	Cupid	Boy god of love
Dionysus	Bacchus	God of wine
Chronos	Saturn	God of time
Eos	Aurora	Dawn goddess
Pan	Faunus	God of flocks and herds



## SCANDINAVIAN AND SAXON MYTHOLOGY

The chief Scandinavian gods were the Mysterious Three, led by *Har* (the mighty); the *Aesir*, led by *Odin*; and the *Vanir*, led by *Njord*. The chief Saxon gods were *Odin*, or *Woden*, and *Frea*, corresponding in status to *Jupiter* and *Juno*; *Hertha*, goddess of the earth; *Tiw*, from whom Tuesday is named; and *Thor*, god of war.




the conquest of the darkness of night, and that of the breaking of the prison of the rain.

But the time came when people could no longer accept the dogmatism of the philologists. It became incredible that the gods of the Aryan-speaking nations (and they were the only ones the philologists seriously attempted to explain) were due to "a disease of language," and one of the things that made it incredible was the wearisome monotony of the results.

Insurrection broke out first in Germany, while in Great Britain the researches and example of Tylor, Avebury, and MacLennan had prepared the way. Andrew Lang declared war in a number of essays, culminating in *Myth, Ritual and Religion*, 1887. He proved that the irrationalities of Greek

THE ancient Egyptian hieroglyph corresponding to the letter N, resembled a water-line , which in the hieratic form (3000-2500 B.C.) was at once formalised and simplified thus:  The resemblance of this character to an ash was close enough for the Phoenicians and Hebrews, adopting the letter in their own alphabets to give it the Hebrew name for fish, which is *nun*, whence our name for the letter is directly derived. In carving the letter, however, they tended to lengthen the upward and downward strokes at the extrem



ities at the expense of the horizontal:  The earliest Greek form:  and the early Latin  reveal clear stages between the earliest and final forms. The classic Roman had the central diagonal thick and the two uprights thin, this being the natural result from the use of the broad-pointed pen, which inscribed the letter in three strokes, up, down, up. But for informal writing the speedier method was used of starting and ending with downward strokes, as in the minuscule, now represented by the familiar small n of the printer

**N** Fourteenth letter of the English and Latin alphabets, one of the nasal consonants. In the combination *ng* it has a marked nasal sound in words like *king*, *sing*, to some extent comparable with the sound heard in the French *mon*, *non*. Otherwise it is pronounced as in *can*, *neck*. It is mute at the end of words after *m*, as in *column*, *hymn*, *solemn*. See Alphabet: Phonetics.

**Naafi.** Popular abbreviation for the Navy, Army, and Air Force Institutes. The work of the organization is described under Canteen. *Pron.* Naffy.

**Naaman.** Biblical character. A distinguished Syrian general, he was cured of leprosy by following the advice of the prophet Elisha and thereupon adopted the Jewish religion (2 Kings 5).

**Naas.** Urban dist. and market town of Kildare, Eire. It is served by Eire state rlys. and the Grand Canal. It stands near the Liffey, 20 m. S.W. of Dublin. Supposed to have been the capital of the kings of Leinster until after the English conquest it had



Naas arms

a castle and an abbey, and it was represented in the Irish parliament till 1800. Near is Punchestown (*q.v.*), which holds an annual steeplechase meeting. Market days, Mon. and Thurs. Pop. 3,774. *Pron.* Nace.

**Näås.** Village of Sweden, in the län or govt. of Göteborg, 20 m. by rly. N.E. of the seaport of Gothenburg. It is the seat of the Abrahamson school of handicrafts.

**Nabeul.** City in the N.E. of Tunisia, renowned for its manufacture of perfumes and essences. It is situated on the Gulf of Hammamet in a fertile district producing oranges, lemons, and flowers, grown for European markets. There is a rly. to Tunis.

**Nabha.** Tn. and former Phulkian state of Patiala and E. Punjab union, India. The area has

an annual rainfall of 18 ins. and grows food grains. In 1928 the ruling chief was deposed and succeeded by a son aged 10. Nabha town was founded in 1755 by Hamir Singh. Since irrigation has been in use from the Sirhind Canal the soil has become waterlogged and the town unhealthy. Area 947 sq. m. Pop. state, 340,044: town, 19,040.

**Nablus** or **NABLOOS.** Town of Palestine, 28 m. N. of Jerusalem. As Shechem, it is frequently mentioned in the O.T. Abimelech, the son of Gideon, destroyed the city; later it was rebuilt, and became the capital of Jeroboam, but was eventually deserted. Vespasian built a new town on the site, and called it Flavia Neapolis, the modern title being a corruption of the second word. According to tradition Jacob was buried in Shechem, and Jacob's Well is shown near Gerizim. It was a holy city of the Samaritans, and the birthplace of Justin Martyr. During the First Great War the Turks, after their surrender of Jerusalem, fortified Nablus as a military base. In Sept., 1918, it was taken by British troops under Allenby. Pop. 23,250.

**Nabob.** Title given to the Great Mogul's viceroys, and generally to native rulers and persons of rank in India. In the 18th century nabob was used in England of one who ostentatiously spent a fortune made in the East. It is a corruption of the Hindustani *nawab*.

**Nabonidus.** Last independent king of Babylon. A usurper of priestly descent, he devoted himself to temple restoration and research. Government was left to his son Belshazzar (*q.v.*). The life of Nabonidus was spared when Babylon fell to Cyrus of Persia. 538 B.C. See Babylonians.

**Naboth.** Jezreelite who owned a vineyard adjoining the palace of Ahab. When he refused to part with it, Jezebel secured it by causing Naboth and his sons to be executed on a false charge of blasphemy (1 Kings 21). See Ahab.

**Nacelle.** Aeronautical term for the engine housings of a multi-engine aircraft. They are usually situated in the leading edges of the wings. Formerly the term was used for the whole aircraft body.

**Nachtigal, Gustav** (1834-85). German explorer. Born Feb. 23, 1834, at Eichstedt, he qualified in medicine at Halle, and in 1869 was sent on a mission to the sultan of Bornu. Thence he explored Lake Chad and the Shari river, traversed Wadai, and made his way back to Cairo in 1874. Ten years later he was sent by the German govt. to the W. coast of Africa and explored those parts of Togoland and Cameroons which were eventually annexed by Germany. He died April 20, 1885.

**Nadia** or **NABADWIP.** Dist. and town of W. Bengal, India. The dist. is a part of the Ganges delta, and the govt. maintains channels for steamer navigation in the Bhagirathi, Bhairab, Jalangi, and Matlabhanga rivers. Rice and jute are grown. The town is on the Bhagirathi or Upper Hooghli, 55 m. N. of Calcutta. Area 2,879 sq. m. Pop. dist., 1,759,846; town, 20,983.

**Nadiad.** Town of India in Kaira dist., Bombay state. It is a rly. junction on the line from Baroda to Ahmadabad. There is considerable trade in tobacco and ghi. A cotton mill provides some employment. Pop. 46,510.

**Nadir.** In astronomy, the point of the celestial sphere directly beneath the observer, i.e. exactly opposite to the zenith (*q.v.*).

**Nadir** (1688-1747). Shah of Persia. He was born in Khorassan and at the age of 17 he was captured by the Uzbek Tartars, escaping after four years' captivity. After many wild adventures, he entered the service of Tahmasp II, shah of Persia, in 1726 and deposed him in 1732, proclaiming himself regent for the minor Abbas III. He carried out successful campaigns against the Russians and Turks, and on the death of Abbas, 1736, seized the Persian throne. Victorious against Afghanistan and

Bokhara, he invaded India, attacked the Great Mogul, seized Delhi in 1739, carried away the Koh-i-Nor diamond and the Peacock throne, and put over 30,000 of the inhabitants to the sword. He was assassinated at Pethabad, June 19-20, 1747.

**Nadir Shah** (1830-1933). King of Afghanistan. Born April 10 1880, his full name being Mohammed Nadir Shah Ghazi, he defeated Habibullah in 1929, being proclaimed king, Oct. 16. He travelled extensively in Europe and endeavoured to introduce Western ideas into his country, but his attempts to effect national unity and modernise Afghanistan were cut short by his assassination, Nov. 8, 1933.

**Nadson, SEMION YAKOVLEVITCH** (1862-36). Russian poet. Born in St. Petersburg, of Jewish birth, at the age of 20 he published a volume of poems, which met with great popular success. In 1884 he joined a St. Petersburg weekly paper, but died two years later.

**Naegli, KARL WILHELM VON** (1817-91). Swiss botanist. He was born Mar. 26, 1817, and studied botany at Geneva and Zurich. He became professor of botany at Freiburg in 1852 and Munich in 1858. Specializing in the microscopic study of plants, he made many important discoveries, notably that of protoplasm and of the spermatozooids and antheridia of ferns. He died May 10, 1891.

**Naevius** (c. 269-204 B.C.). Roman dramatist and poet. A native of Campania, he was the predecessor of Ennius and an older contemporary of Plautus. He fought in the first Punic War, and afterwards settled in Rome. He persistently attacked the aristocracy, especially the Metelli, by whom he was banished to Utica, where he died. He was the author of tragedies and comedies, and of the first Roman epic poem, written in the old Saturnian metre, the subject being the Punic Wars.

**Naevus** (Lat., mole). Lesion of the skin often present at birth, due to an over-growth of the blood vessels of the skin causing the condition known popularly as port wine mark or strawberry mark. If they are small in area treatment is by carbon dioxide or electrolysis; if large in area, by skin grafting. Other types of mole may develop in later life and may need surgical treatment.

**Nafud.** Desert of Arabia. Situated in Nejd, it extends some

400 m. from W. to E. and has an average width of 200 m. Almost waterless, it is rich in pasture in any season of normal winter rainfall, the Beduins visiting it in the spring to graze their camels and flocks. It has a general altitude of almost 3,000 ft., and one of its most striking features is the pits found amongst the sand dunes. Their floor is generally of hard bare soil, and the steep walls are of pure sand, the largest being 330 ft. deep and  $1\frac{1}{2}$  m. wide.

**Naga.** Tribes of Indonesian stock occupying the hill ranges of E. Assam. They numbered in 1911 220,034, speaking diverse Tibeto-Burman dialects. The head-hunting warrior is distinguished by cowry ornaments with human hair and tattooing. Cane girdles and anklets are also worn. Eighteen British expeditions, 1832-87, were required for the subjugation of the tribes.

**Nagada.** Town of Egypt. It stands on the left bank of the Nile, 16 m. below Luxor, Upper Egypt. Between it and Ballas 3,000 graves and two towns were excavated in 1894. The pottery, with paintings of gazelles, ostriches, and river-boats, was associated with bone harpoons, flint implements and other neolithic remains. In 1897 de Morgan unearthed what is claimed to be the tomb of Mena, who founded the 1st dynasty.

**Naga Hills.** District of Assam, India. It is occupied by the Naga tribe, and comprises a section of the mountainous tracts on the borders of Burma. Manipur lies to the S.; very little of the area is cultivated. Its area is 4,239 sq. m. Pop. 189,641.

The Naga Hills were the scene of violent fighting between Japanese and British forces in 1943. See Burma Campaign, 1941-45.

**Nagana.** A disease occurring over large areas of Africa, often fatal to domesticated animals. These districts were known as "fly belts," because of the disease being associated with the Tsetse Fly (*q.v.*).

**Nagano.** Town of Japan, in Honshu. It is situated towards the W. side of the island, near the confluence of the Sogawa and the Shinanogawa. It is the capital of a prefecture famed for its sericulture and forestry. The town was formerly called Zenkoji, from the Buddhist temple which stands on an elevation in the city. The monastery dates from 664, but the buildings are modern; the chief images are reputed to have been

made by Buddha himself. The town is on the rly. from Tokyo to the W. coast. Pop. 43,000.

**Nagasaki.** Seaport of Japan, on Kyushu island. It stood on a fine natural harbour on the W. side of the island, 3 m. from the open sea. It held the monopoly of European trade from the 16th century until 1859, when Japan was opened to foreign trade and towns more centrally situated superseded Nagasaki. The port had connexion by rly. and sea with other Japanese ports. Coal is mined in the neighbourhood. There were coke and briquette factories, ironworks and dockyards. It traded in coal, cotton, rice, sugar and camphor.

On Aug. 9, 1945, the second atomic bomb was dropped on the city by a U.S. aircraft, the first having devastated Hiroshima (*q.v.*) three days earlier. The centre of destruction was the industrial area in the Urakami valley, which was obliterated. The harbour and commercial area, nearly two miles distant, escaped with only minor damage. It was announced that 73,884 people were killed and 76,796 injured. See Atomic Bomb.

**Nagina.** Town of India, in the Bijnor dist. of Uttar union. It is situated near the middle of the dist. on the rly. from Moradabad to Dehra. It manufactures cotton, cloth, and glass, and is noted for ebony carving. Pop. 26,077.

**Nagorno Karabakh.** Autonomous province of the Azerbaijan S.S.R. Situated in Transcaucasia, it is in the S.W. of the republic. The capital is Stepanakert.

**Nagoya.** City of Japan, in Honshu. It is in the S. of the fertile plain of Mino and Owari, and owes its importance to the Shogun stronghold built in 1610. S. of the city is Nagoya harbour, on the bay of Ise. Silk and cotton, threads and fabrics are important manufactures, and the city was a pioneer in the clock industry. Atsuta Jingu is the second greatest Shinto shrine in Japan. Almost half-way between Tokyo and Osaka, the city has rly. connexion with these centres and those on the W. coast. Nagoya was bombed by U.S. aircraft on April 18, 1942, and on several occasions in 1944 and 1945. Troops of the U.S. 6th army occupied the town after Japan's surrender in Aug., 1945. Pop. 483,000.

**Nagpur.** Division and district of the Madhya union, India. The division consists of the Nagpur plain, sloping gently S. from the Satpura ranges and drained by the

Wainganga and Wardha, to the Prahita and Godavari. The dist. has a rainfall of 46 ins. Only a third of the land under cultivation is devoted to food grains, mainly wheat, most of the remainder being under cotton. Area, div., 27,294 sq. m.; dist., 3,836 sq. m. Pop. div., 3,924,985; dist., 1,059,989.

**Nagpur.** Capital of the Madhya union, India, formerly the Maratha capital of the Bonsla rajas. It occupies a central position between the Wardha and Wainganga rivers, in close relation to the great cotton-growing area of the Deccan. The importance of the town increased when the direct line from Bombay to Calcutta was made through it. It has several educational institutions, including the Morris College. Pop. 301,957.

**Nagy.** Magyar word for great. Formerly incorporated in the place names of many towns in the Austro-Hungarian empire, it has been dropped from some of them since their incorporation in other countries, e.g. Nagyikinda, Yugoslavia, became Kikinda, Nagyszombat, Czechoslovakia, became Trnava, and Nagyvarad, Rumania, became Oradea.

**Nagykanizsa.** Town of Hungary. It is situated to the S.W. of Lake Balaton on the main line rly. from Budapest, 143 m. to the N.E., to Trieste with a branch through Odenburg (Sopron) to Vienna. There are distilleries and tile works. Pop. 30,936.

**Nagykaroly.** Town of Rumania formerly in Hungary. The Rumanian form of the name is Careii Mari. It is 185 m. E.N.E. of Budapest, on the main line to Ruthenia, with a branch rly. connexion to the main towns of Transylvania. There are sawmills and textile factories. Pop. 16,000.

**Nagykörös.** Town of Hungary in the co. of Pest-Pilis-Solt-Kiskun. It is 56 m. by rly. S.E. of Budapest on the main line to Szeged, 10 m. N.N.E. of Kecskemét. Wheat, maize, and melons are grown, and cattle are reared. Pop. 28,600.

**Nahan.** Alternative name for Sirmoor (*q.v.*), former Indian state now in the Himachal union; also the name of the capital town.

**Nahas Pasha, MUSTAFA EL** (b. 1876). Egyptian politician. Educated at Cairo, he entered the legal profession, becoming a judge of the local courts. Turning his attention to politics, he became a member of the house of deputies in 1924, being president 1927-28. In 1927 he became chairman of the Wafd party, the leading nationalist party until the split in 1938,

and was notoriously anti-British. He was prime minister in 1928, 1930, 1936-37, 1942-44 (when he was also foreign minister), and from 1950.

**Nahe.** River of Germany. A left bank tributary of the Rhine, it rises near Selbach in Birkenfeld and joins the main stream at Bingen. Its length is about 60 m., much of its course being between vine-clad hillsides, the picturesque scenery of which attracts large numbers of tourists.

**Nahua.** Collective name for American Indian tribes which dominated Anahuac, the Mexican tableland at the time of the Spanish conquest. Their language was called Nahuatl. They dwelt in scattered pueblos, whose rivalry led to the formation of confederacies, whereof the Aztec finally secured the hegemony. Their descendants, called Mexicano, number probably about 500,000.

**Nahuel-Huapi** OR **TIGER LAKE.** Large lake of Argentina, in the territory of Neuquen, bordering that of Rio Negro. Situated in the Andes, at an alt. of 2,000 ft., it is 75 m. in length and 10 m. in breadth, with an area of 110 sq. m., and contains many islands. It is the source of the river Limay, the boundary of the territories of Neuquen and Rio Negro.

**Nahum.** One of the minor prophets. A native of Elkohah, probably in Galilee, he flourished about the 7th cent. B.C. His book consists of predictions of the fall of Nineveh, which took place 606 B.C. The reference to the capture of No-Amon (Thebes) by Ashurbanipal, king of Assyria, further shows that it must have been written later than 666 B.C.

**Naïadaceae.** Family of aquatic herbs once including *Aponogeton*, *Potamogeton*, and *Zostera*, but now comprising only the single genus *Najas*. Two species are found in fresh water in Great Britain. Their small unisexual flowers pollinate under water.

**Naïads** OR **NAÏADES.** In Greek mythology, nymphs of rivers, brooks, springs, and fresh water generally. See *Nymph*.

**Naidu, SAROJINI** (1879-1949). Indian poet and politician. Born in Hyderabad state, Feb. 13, 1879, she was educated at King's College, London, and Girton College, Cambridge. She later published poetry in English which was translated into Indian languages, e.g. *The Golden Threshold*, *The Bird of Time*, and *The Broken Wing*. A friend of Gandhi, she worked for Indian independence

lecturing on social, religious, and educational subjects. A member of the working committee of Indian National Congress and Women's movement, she was president of the Indian National Congress in 1925, and delegate to the London round table conference in 1931. Arrested as participant in the civil disobedience campaign in 1940 and 1942, she was governor of the United Provinces from 1947 until her death, March 2, 1949.

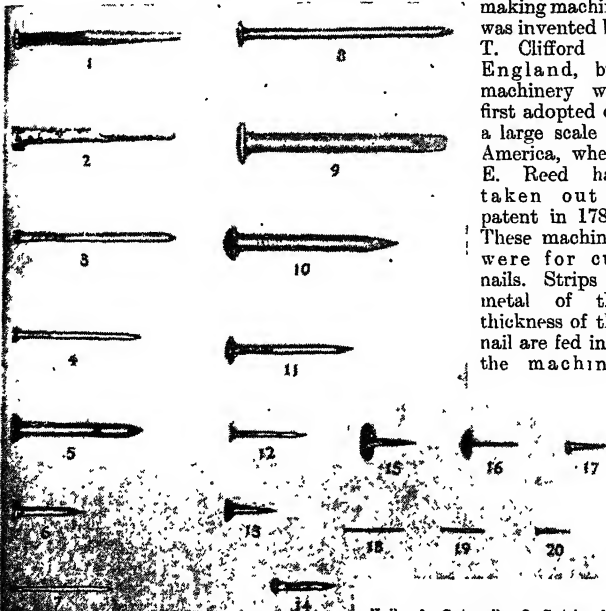
**Naihati.** Town of W. Bengal, India. It is situated on the left bank of the Hooghly, 24 m. above Calcutta. Pop. 51,000.

**Naik.** Non-commissioned officer in the armies of India and Pakistan, equivalent to corporal in the British army. Holders of similar rank in cavalry regiments are known as daffadars.

**Nail.** Metal spike, usually having a point and a broadened head, used for attaching wood or metal parts to wood. Tree-nails (or trenails) are hard wooden pegs for a similar purpose, used (e.g.) for oak, where metal nails would become corroded. Metal nails are made of iron (mild steel), brass, copper, zinc, and various alloys; those to resist corrosion are galvanised, tinned, or coated in other ways. Steel nails may be "brassed" or "coppered" to give a desired appearance, or to utilise the greater strength of the steel. Screwnails are twisted in the shank spirally so that when driven they rotate and are drawn into the wood.

Cut nails like 1 and 2 (illus. p. 5950) are stamped from plate of appropriate gauge. Wrought nails are formed by a forging process to give an enlarged or ornamental head. Large types of nail are cast. Wire nails, most extensively used today, are formed from wire of suitable shape and gauge by machine, being headed and pointed in a continuous operation. The full range extends from 10 ins. long by  $\frac{3}{8}$  in. diam. in the round variety (No. 8) down to  $\frac{1}{8}$  in. long and of diameters according to the S.W. Gauges 16, 17, and 18. Oval wire nails (No. 3) are made in 6 ins. long by 6 gauge down to  $\frac{1}{8}$  in. long by 20 gauge—the thickness mentioned being that of the narrowest section of the oval. Panel pin (No. 7) range from 2 ins. by 14 gauge to  $\frac{1}{8}$  in. by 18 and 19 gauge. Wire nails and cut nails for building purposes are described in the British Standard Specification No. 1202: 1944.

Nails used to be distinguished as twopenny, 1 in. long; threepenny,



or floor brad. 3. Oval wire nail. 4. Small ditto. 5. Wall nail. 6. Small clout nail. 7. Panel pin. 8. Round wire nail. 9. Galvanised chisel-pointed roof nail. 10. Bright roofing nail. 11. Brass-headed nail. 12. Lath nail. 13. Small stout tack. 14. Screw nail. 15. Drugget pin. 16. Chair nail. 17. Tinned tack. 18. Cigar-box pin. 19. Small pin. 20. Wire gimp pin

1½ ins. long; and fourpenny, 1½ ins. long. These denominations are still used in the U.S.A.

Until the end of the 18th century practically all nails were hand made, forged from nail rods by the blacksmith. The chief centre for nail-making was in Birmingham, and women and children were largely employed. In 1790 a nail-

which automatically cuts the strips into the required lengths and shapes the heads to correct size.

Wire or "French" nails did not come into general use until about a century later. After entering the machine the wire is led through straightening rolls, and is then gripped by a die which puts on the burrs which roughen the top part of the shank in some types; a cutter

closes in upon the shank at the pre-set length and shapes the point, while at the same time a heading die holds the opposite end to receive the blows of a hammer which forms the enlarged head. Finally a pusher breaks away the finished nail where it has been pointed. The output is about a thousand a minute.

**Nail.** Horny scaly growth at the ends of fingers and toes of human beings and some animals. The human nail consists of three parts: the extremity or apex; the opposite end or root, where it emerges from the flesh; and the

whitish part, termed the lunula, or half-moon. Nails are a special growth of the epidermis or skin tissue. In biology they are homologous with the hoof and claw of other animals. See Horn.

**Nail-Head Spar.** A variety of the mineral calcite (*q.v.*), so called on account of the crystalline form, a combination of the flat rhombohedron and prism.

**Nain.** Ancient town in Galilee, situated 6 m. S.E. of Nazareth, on the summit of Little Hermon, or the hill of Moreh. The ancient town was probably on its summit. It was the home of a youth whom Christ raised from the dead (Luke 7).

**Naini Tal.** District and town of the Uttar union, India, in the Kumaun division. The dist. is situated on the Himalayan slopes N. of Rampur State. The annual rainfall averages 67 ins. A 120-acre lake 6,410 ft. above sea level is a striking feature. It has sulphur springs. The peaks of China (8,568 ft.) and Deopatta (7,589 ft.) enhance the beauty of the scene. On Sept. 18, 1880, a disastrous landslide caused by torrential rain caused heavy loss of life: the day is still kept in memory of those who died in that calamity. Only a sixth of the area is cultivated. The town is a hill station reached by road from the rly. terminus at



Naini Tal, India. The summer station of the United Provinces administration by the lake of Naini Tal

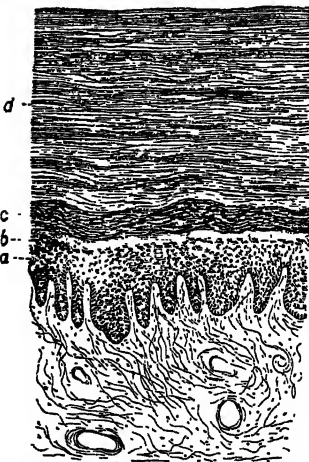
Holdwani. Elevation 6,409 ft. Area, 2,627 sq. m. Pop., dist., 291,000; town, 10,000.

**Nainsook** (Hind., pleasure of the eye). Soft muslin of Indian origin. Nainsooks are either plain or striped, the stripes running lengthways. In India they were sometimes made of silk. See Muslin.

**Nairn.** Royal and mun. burgh and watering-place of Nairnshire, Scotland, on the Moray Firth. It is also the county town.



Nairn seal



Nail. Vertical section through human nail and nail-bed. a, stratum malpighii, and, b, stratum granulosum, of nail-bed; c, deep layers of nail substance; d, superficial layers. Highly magnified



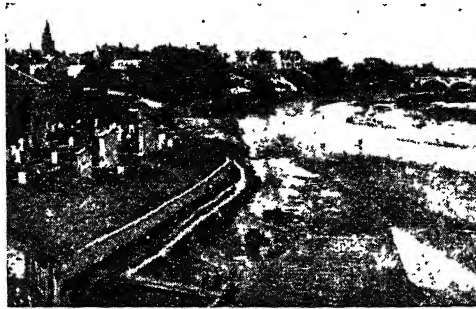
It stands where the Nairn falls into the Moray Firth, 15 m. by rly. from Inverness. The attractions include good bathing and golf links. It has a good harbour. Chief industries are fishing and fish-curing. Nairn, known then as Invernairn, was made a royal burgh in the 12th century. Pop. 4,201.

**Nairne, CAROLINA, BARONESS** (1766-1845). A Scottish ballad-writer. A member of a prominent



Jacobite family, she was born at Gask, Perthshire, Aug. 16, 1766, and in 1806 married William, afterwards Baron Nairne (1757-1830), to whom she bore one son, William (1808-37). Her beauty and charm won for her the name of The Flower of Strathearn. After her husband's death she lived in Ireland and on the Continent, and died at Gask, Oct. 26, 1845. She wrote nearly 100 songs, some of them adaptations of old favourites, among them The Land o' the Leal, Caller Herrin', and The Laird o' Cockpen. They were issued in volume form in 1846 as Lays from Strathearn. See Life and Songs of Lady Nairne, C. Rogers, 1869; Jacobite Lairds of Gask, K. Oliphant, 1870; Lady Nairne and her songs, G. Henderson, 1905; The Oliphants of Gask, Records of a Jacobite Family, M. E. Blair-Oliphant, 1910.

**Nairnshire.** Maritime county of Scotland. It has about 10 m. of coastline on the Moray Firth, and the surface rises towards the S., attaining an alt. of 2,162 ft. in Carn Glas. Its area is 163 sq. m. The



Nairn. General view of the town and banks of the Nairn from the north

chief rivers are the Findhorn and the Nairn. The county is an agricultural area, but much of the land is only suitable for sheep. Nairn is the county town, and in the shire are Cawdor and Kilravock with their castles, and Auldearn. In 1891 detached portions of Nairnshire were absorbed in the counties of Ross, Inverness, and Moray. In early times, Nairn was part of the district called Moray, and it has always had a close association with the shire of that name. It joins with Moray to form a co. constituency. Pop. est. 8,700. Consult History of Moray and Nairn, C. J. G. Rampini, 1897.

**Nairobi.** City of Kenya Colony, E. Africa, capital and centre of administration of the colony. It is situated on an elevated plateau, at a height of 5,475 ft., within easy reach of the Kikuyu and Limoru highlands. It was originally founded, 1899, as a rly. settlement, and still remains the chief rly. centre for Kenya and Uganda, being 327 m. from Mombasa, and 257 m. from Kisumu (Port Florence) on the Victoria Nyanza. It also has an important aerodrome and is the terminus of a motor road that crosses Uganda to Mongalla, Sudan.

The healthy and invigorating climate, due to its altitude, made Nairobi suitable for European settlement, in spite of its two rainy seasons; and it now has the largest European pop. of E. African towns. There are an Anglican cathedral, the McMillan memorial library opened in 1931, and a fine town hall, opened, with

the rebuilt law courts, in 1935. W. of the town is the cantonment of the King's African Rifles. In 1950 Nairobi was incorporated as a city by royal charter, the ceremony being performed, March 30, by the duke of Gloucester. Pop. 111,000, of whom over 10,000 are Europeans.

**Naivasha.** Town and lake in Kenya Colony, E. Africa. It is included in the Nakuru district, which is extensively cultivated. Lake Naivasha is about 12 m. long by 9 m. broad. The hippopotamus is protected in the lake, which is also well stocked with black bass. The township on the E. of the lake is on the Uganda rly., 391 m. from



Nairobi, Kenya Colony. Government Road, an important thoroughfare in this capital city

Mombasa, and 64 m. N.W. of Nairobi. It is a holiday resort.

**Najibabad.** Town of the Uttar union, India, in the Bijnor district. It is situated in the N. of the district, and is a rly. junction on the route from Delhi to Dehra. Pop. 26,898.

**Nakhichevan.** Autonomous republic forming part of Azerbaijan S.S.R. Bordered S. and S.W. by Persia, and N. and E. by Armenia S.S.R., it has an area of 2,488 sq. m. It was constituted in 1921. The surface, consisting of part of the valley of the Araxes in the S.W., rises to 10,000 ft. in the E. The rly. line from Baku to Tbilisi (Tiflis) skirts the S.W. border, and sends a branch line into the interior. For many years on a trade route between Russia and Persia, it was annexed by Russia in 1828. Its capital, of the same



Nairnshire. Map of the Highland county south of Moray Firth

name, is situated 85 m. S.E. of Erivan, and is a centre for the manufacture of textiles, leather goods, pottery, wine, salt, and food products. Pop. 103,600.

**Nakhichevan-on-Don.** Town of the R.S.F.S.R. It is situated on the Don and the Klov-Rostov rly. about 6 m. N.E. of Rostov-on-Don. Candles, cotton goods, and bricks are chief products. It was founded in 1780 by Armenian immigrants. Pop. 71,321.

**Nalchik.** Town of U.S.S.R., capital of Balkaria-Kabardin A.R. It is situated 150 m. W. of Grozny in the Caucasus. It was evacuated by the Russians on Nov. 2, 1942, in the face of heavy German pressure, and was left in flames. Russian forces retook the town on Jan. 4, 1943.

**Nama or NAMAQUA.** Division of the Hottentot people, mostly in Namaqualand, S.W. Africa protectorate. Numbering 14,000, they have preserved their racial type and speech more completely than the Korana division, who remained behind in the upper Orange basin. From 1881 to 1906 they were in incessant conflict either with the Herero, or with the Germans. Despite missionary influence they still cling to their ancestral pastoral nomadism. See Hottentot.

**Namangan, or NAMANCHAN.** A town of Uzbek S.S.R. It is in the valley of the Syr-Daria, 50 m. by rly. N.E. of Khokand. Considerable trade is carried on in cotton, fruit, hides, and sheep. In the neighbourhood are naphtha wells and coalbeds. Pop. 77,351.

**Namaqualand, GREAT.** Country in the S.W. Africa Protectorate, formerly German S. W. Africa. Extending from the Orange River to Damaraland, it is mainly a sterile desert region, and was occupied by the Germans in 1885. It is inhabited by the Namas, a few bushmen, some tribes of Hottentots, and white settlers. See South-West Africa.

**Namaqualand, LITTLE.** Dist. in the Cape Province. It lies S. of the Orange River, by which it is separated from Great Namaqualand. Diamonds and copper are exported from Port Nolloth. Area 20,000 sq. m. Pop. 25,847.

**Namasagali.** Port on the Victoria Nile. It is connected by the Busoga rly. with Jinja. A steamer service runs to Foweira, 160 m. N.N.W.

**Nam-dinh.** Town of Vietnam in Tong-king, on the rly. from Hanoi to Hué and Tourane. It is 45 m. S.E. of Hanoi, on the Songka. There is a trade in silk and cottons.

**Name.** Title by which any person or object is indicated; in a narrower sense, the name given to a person or object to distinguish it from others of the same class. The manner in which personal names were given varied among different peoples, but names taken from personal characteristics and peculiarities are common to all.

In the U.K. a person may change his surname as he pleases. His name is that by which he is generally known. Although during the Second Great War an advertisement in the London Gazette had to be published, no formalities are now necessary for a change of name, but to preserve evidence of change it is sometimes desirable to execute a deed poll, or in rare cases to obtain a royal licence or the passing of a private Act. To have the name changed on ration books and identity cards, notice must be given to the authority issuing the document.

A Christian name, i.e. one given at baptism, cannot be changed except by the bishop at the time of confirmation; by Act of parliament; or on the legal adoption of the bearer of the name, when another name may be added. A person who has not been christened may change his first name or names in the same way as his surname. A woman on marriage in England usually takes the surname of her husband, but need not. In Scotland she still uses her maiden name in legal documents. On divorce she may revert to her maiden name.

The Greeks had no names answering to surnames, and it was left to the parent to decide what name the child should have. Most Greek names were compound—*Leuk-hippos* (with white horses), *Thrasylbulus* (bold in counsel). In oldest times, the child as a rule took the name of his grandfather, sometimes that of his father. For the sake of distinction a patronymic was often added—Agamemnon Atrides, Agamemnon the son of Atreus; or the father's name was added in the genitive—Cimon of Pericles.

The Romans originally had only one name—e.g. Romulus—but in republican times three names became the rule: *praenomen*, answering to the modern given name—Aulus, Marcus, usually abbreviated to A., M.; *nomen*, the gentile or clan name, nearly always ending in *-ius*, e.g. Julius, Tullius; *cognomen*, the family name, Caesar, Cicero. A fourth name, *agnomen*, was given for famous deeds, such as Afri-

canus, and in cases of adoption, when the adopted son took the three names of his adoptive father, to which he added that of his own clan or gens (*q.v.*), with an altered termination. Women as a rule had the clan or gens name of their father with a feminine termination, e.g. Tullia.

In England many names are derived from personal characteristics, and are really mere epithets. Patronymics are formed by adding son, e.g. Johnson, Thompson, a favourite method in Scandinavian countries. English surnames may be classified as general and special local names—Hill, Dale, Burton, Buxton; names of occupation—Barber, Brewer, Baker, including lost trades, Fletcher, Fargiter, Reeve; names formed from first names, as Wilkinson, Wills, Willis, from William; names of mental or physical characteristics—Good, Wise, Long, Black, White. A great many of the first names in common use are of religious origin.

Among the Spaniards, names derived from the father end in *-ez*, e.g. Hernandez, the son of Hernando. The old Persians and Indians had compound names, like those in earliest use among the Greeks and Germans. Among the Indians and Hebrews religious names were common—Kaldasa, servant of the goddess Kali, Eliezer, whom God helps. The Arabs form a *praenomen* by the aid of the prefix *abu*, father; names like Hassan, which did not descend from father to son, were usually followed by the name of the father, with an interpolated *-ibn-* or *-ben-*, son of—Hassan-ibn-el-Abbas; other names were taken from religion and court—Salah ed-din, safety of faith, Saladin; from a man's occupation, tribe, birthplace, or sect, while others were pure nicknames. Among the Chinese the *praenomen* is not definitely established, and may be changed until a person enters an educational institution or becomes the holder of a public office.

In some ecclesiastical classes, such as monks and nuns, a new first name is adopted when certain final vows are taken. The pope, on election, takes a new name. Monarchs, on assuming the throne, occasionally use a name by which they had not previously been known, e.g. King George VI had been known during his father's reign as Albert, Duke of York.

Geographical names are often intended to convey to the mind a kind of picture representing the most salient physical features.

Such are Benmore, Morven, both meaning great mountain; Mont Blanc, white mountain. In Celtic Aber, Inver denote places at the mouth of a river—Aberconway, Aberdeen, Aberfeldie and Inver-geldie, Inverness. Ard, Craig, Drum, Fell, Pen, Tor, and others refer to high ground generally—Ardglass, green height; Craigmore, great rock; Drumlane, broad ridge; Scawfell, the mountain of the promontory; Penmaenmawr, the great stone head; Torbay, the hill over the bay. There are frequent references to colour, plant and animal life. *See* Place Name.

**Bibliography.** Dictionary of English and Welsh surnames, C. W. Bardsley, 1901; Words and Places, I. Taylor, 1909; Words and Names, E. Weekley, 1932; Jack and Jill, E. Weekley, 1939.

**NAMING CUSTOMS.** Rites and usages attend the choice and bestowal of personal names. In primitive culture an underlying notion is traceable that names are the substance of individual souls expressed by the voice. So the Eskimo, by naming children after the person last deceased in the village, seek to perpetuate the tribal soul, while the Aztec, by bestowing the name of a dead relative, did the same for the family-soul.

As death or injury may result from the malevolent misuse of names, they are frequently kept secret, sometimes by entrusting them to material objects buried out of sight, other designations being employed in ordinary life. This idea is extended to divine names. Moreover, such crises as initiation, marriage, social promotion, and death necessitate name-changing, by replacement or accumulation, the Kwakiutl even having summer and winter names. Name-changing is also practised for deceiving disease-demons or counteracting sorcery, while opprobrious names, such as Three-farthings, Dustheap, Perdita (lost), are frequently bestowed in infancy to avert evil eye.

A widely observed custom called teknonymy (Gr. *teknon*, child, *onoma*, name), requires fathers to drop their previous names at the birth of sons, and to assume instead the sons' names, or names meaning father of N. Many peoples, e.g. Fuegians and Malays, taboo the names of the deceased, and in Tahiti and Zululand extend this to all related words in the language, for a time at least.

**Name, FEAST OF THE.** Roman Catholic feast in honour of the Blessed Virgin Mary. It arose in

Cuenca, Spain, in the 16th century, and is one of 20 of a similar character. First kept on Sept. 22, then on Sept. 8, it is now observed on Sept. 12.

**Name Day.** A term in the London and other Stock Exchanges. It was applied to the second day of the fortnightly settlement, when the names of the purchasers of stocks and shares are handed in by the brokers concerned, preparatory to the pay day following. In the First Great War, when the fortnightly settlements were abandoned, there were no name days, transactions being settled daily.

**Namoi OR PEEL RIVER.** Rivér of New South Wales, Australia. It rises in the Liverpool Range and flows for about 600 m. N.N.W. to join the Barwon or Darling river. Its upper valley, almost encircled by mountain ranges, is a valuable wheat-growing area. The lower valley is a pastoral area.

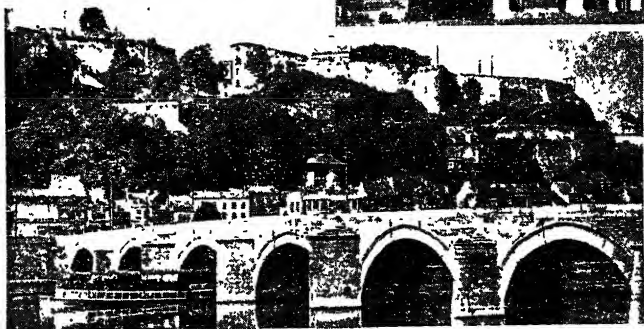
**Namsos.** Town and seaport of Norway. Situated at the mouth of the Namsen river, it is 85 m. N.E. of Trondhjem, with which it is connected by rly. Industries are fishing and boat building. Pop. approx. 4,000.

Namsos was used as an Allied base during the brief Norwegian campaign, 1940. On April 14, a British naval detachment landed at the port, followed by British and French troops a few days later. The British and French forces N. of Trondhjem were evacuated from Namsos on May 2. The town was devastated by repeated German bombing raids. *See* Norway.

well cultivated, the S.E. part is covered with valuable forests, representing a continuation N. of the French Ardennes. The Sambre valley is the chief industrial area, and there are rly. services to all important towns. Namur is the capital, the three arrondissements being Namur, Dinant, and Philippeville. Area, 1,414 sq. m. Pop. 352,173.

**Namur** (Flemish, Naemen). Town of Belgium, capital of the prov. of Namur. It lies 35 m. by rly. S.E. of Brussels, at the confluence of the Sambre and Meuse. The disused citadel stands between the two rivers, and Salzinnes, Belgrade, S. Nicolas, and Jambes are suburbs connected by tramway with the town.

Namur is a rly. junction, has barracks and other military buildings, law courts, and a prison. The industries include the manufacture of cutlery, leather, iron-work, and distilling, as well as firearms and tobacco. The 18th century cathedral of S. Aubain, in Renaissance style, on the site of an earlier building, contains the



Namur, Belgium. The Pont de Jambes over the Meuse, showing the citadel. Upper picture, west front of the cathedral of S. Aubain

**Namur.** Prov. of Belgium. It is contiguous with the provs. of Brabant, Hainault, Liège, and Luxembourg, and with France. The surface is generally hilly, and the prov. is intersected by the deep and picturesque valley of the Meuse. The fertile soil of the N. is

heart of Don John of Austria. The 17th century church of S. Loup is a good example of the Baroque style. The late 14th century belfry was rebuilt in the 16th. There are museums of archaeology, and above the citadel is a finely laid-out park. Pop. 32,000.

**Namur, SIEGES OF.** In the war of the Grand Alliance, the French under Vauban invested Namur, May 26, 1692, and captured the town on June 5, and the citadel itself on June 23. Namur was defended by the Dutch engineer, Menno van Coehoorn (1641-1704), who constructed its fortifications. In 1695, however, William III of England, with Coehoorn, besieged the town, now defended by Boufflers, and after 67 days' investment captured the citadel on Aug. 30, 1695. The later fortifications were constructed in 1888 by Brialmont as part of the Meuse Valley system.

At the outbreak of the First Great War, Namur was ringed by nine armoured forts with 350 guns and a garrison of 30,000. It was the focal point of six railways and, after the fall of Liège, became the hinge on which the French armies were to manoeuvre in their attempt to outflank the Germans in Belgium. On Aug. 19, 1914, the German army invested the fortress and two days later opened a heavy bombardment of the three eastern forts. Next day a sortie by the garrison, supported by part of the French 5th army, failed in an attack on the German artillery positions, and the French were obliged to retreat. By Aug. 23, only three of the forts remained in action, and the Belgian field army was obliged to retire in the face of the rapid advance of the German infantry, who entered Namur that evening. On Aug. 25, the last forts were silenced and the German occupation of Namur completed at a cost of 12,000 casualties. The Allied losses were approximately the same.

During the Second Great War, when the Germans invaded Belgium on May 10, 1940, Namur formed the S. bastion of the Namur-Liège line along which the Belgian high command planned to fight the delaying action essential until the British and French could take up positions along a line from Antwerp through Namur to Givet on the French frontier. The Belgians were then to withdraw to the main defence line stretching from Namur to Antwerp. By May 11, however, the enemy had advanced so rapidly that the Belgians were immediately forced back, without any delaying action, on the Antwerp-Namur line. Namur itself was defended by the Belgian 7th army corps. Following the

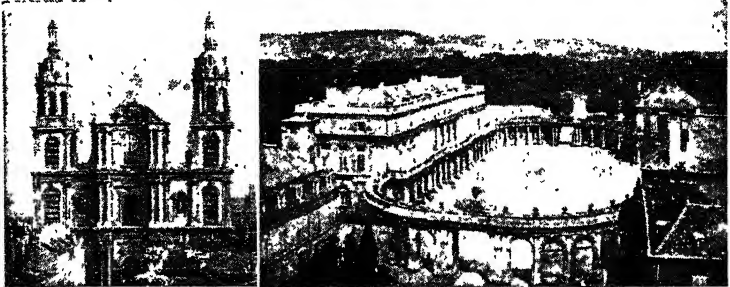
German breakthrough at Sedan, the Allied positions in central Belgium became untenable, and the Belgian army corps was withdrawn from Namur, although some of the individual forts continued resistance until the general Belgian surrender. Namur was liberated by U.S. forces on Sept. 5, 1944, during the Allied sweep through Belgium.

**Nanai.** A people of the Komi-Zyrian A.R. (*q.v.*), R.S.F.S.R., their chief town being Naryan Mar.

**Nanaimo.** Town and port on Vancouver Island, Canada. Situ-

ated 1853, he lost no opportunity of fomenting discontent in the disaffected parts of India. On the outbreak of the Mutiny he proclaimed himself peshwa, wreaking his vengeance on the British by ordering the massacre at Cawnpore (*q.v.*). On the suppression of the Mutiny Nana fled to the Terai jungles of Nepal, where it is reported he died.

**Nanchang.** Capital of Kiangsi prov., China. It is situated on the Kan river, and was formerly on the Po-yang Lake, which has since



Nancy, France. Left, west front of the cathedral; right, Government Palace and its courtyard, formerly the residence of the governors of the province

ated 65 m. N.E. of Victoria, it has a station on a branch rly. and a good harbour, whence steamers go to Vancouver, Victoria, and elsewhere. There are saw mills and brickyards, and fishing and fish curing are carried on. Coal is found in the neighbourhood and exported. The town was a post of the Hudson Bay Co. Pop. 6,635.

**Nana Sahib** (*f.* 1857). Leader in the Indian Mutiny, 1857-58. A Mahratta Brahmin, Dundhu Panth by name, he was born about 1821 and was the adopted son of the last peshwa Baji Rao. Incensed at the British refusal to continue the pension after his father's death,



Nana Sahib. Notorious leader of the Indian Mutiny. He ordered the massacre of Cawnpore

receded some 30 m. Nanchang is connected by rly. with Kiukiang on the Yang-tse. Pop. 412,000.

**Nancy.** French town, capital of the dept. of Meurthe-et-Moselle. It stands on the Meurthe and the Rhine-Marne canal, 220 m. E. of Paris. It was the capital of the former duchy of Lorraine before the war of 1870. The Place Stanislas, the principal square, was laid out by Stanislaus Leszcinski, who became duke of Lorraine on his abdication from the Polish throne in 1736. Interesting buildings include the Cordelier church (15th century), the ducal palace (16th century, though partly rebuilt later), the town hall (17th century), and the Pépinière (1765). The town was founded in the 11th century and here Charles the Bold was defeated by the Swiss in 1477. Charles III laid the first stone of the handsome new town in 1608.

Nancy is the seat of a bishopric and a university. It possesses theatres, libraries, and museums, and the school of forestry which is unique in France. Its industries include textiles, chemicals, ceramics, and iron and wood products, and the manufacture of tobacco. It is an important military centre and has three airports, two under military control. Pop. 113,477.

On Aug. 24, 1914, a German army advancing from Metz attacked the retreating French, who were holding the Grand Couronne.

a semi-circular ridge to the N. of Nancy. The next day the enemy reached Rozelieures, but a French counter-attack took the Germans by surprise and in the three days much ground was regained. Both sides were too exhausted to continue the struggle immediately, and there was a lull in the fighting until Sept. 4, when the Germans launched a new offensive and compelled the French to yield some ground. By pushing up the valley of the Moselle, the enemy took the French in the rear and threatened to penetrate between Nancy and Toule. Although the German advance was eventually held, the French were too exhausted to counter-attack. On Sept. 10, fresh French troops were brought up and a determined attempt made to regain the lost ground; this proved so successful that on Sept. 12 the Germans began a general retreat and the French entered Luneville. About 200,000 French troops were engaged against 250,000 Germans led by Prince Ruprecht. The action was notable as one of the first occasions of the First Great War on which the German army suffered a serious reverse, and it did much to hearten the French in their campaign to halt the German advance into France.

During the Second Great War Nancy was captured by the Germans, June 19, 1940, and after the Franco-German armistice lay within the German-occupied zone of France. It was German supreme command H.Q. in France until shortly before the U.S. 3rd army entered it Sept. 15, 1944, to find it already in the hands of the F.F.I. The Germans blew up the bridges across the Meurthe and the electricity and gasworks; otherwise the town was virtually undamaged.

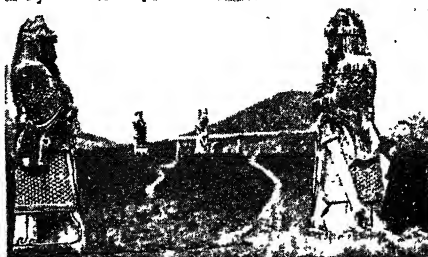
In Dec., 1947, disastrous floods destroyed 2,000 homes in the town.

**Nanda Devi.** Peak of the Himalaya Mts., India. It rises to 25,845 ft. above the plains of Kumaun in the N. of the Uttar union. The 1933 Everest expedition attempted an ascent.

**Nander.** Town of the state of Hyderabad, India. It is situated on the left bank of the Godavari, 126 m. S.W. of Amraoti, with which it is connected by road, on the Bombay-Hyderabad railway. Pop. 21,470.

**Nandgaon.** A former state of India, now part of the Madhya union. It lies on the watershed between the Wainganga and Mahanadi valleys. Rice, wheat, and cotton are grown. The capital is

Rajnandgaon, on the rly. between Nagpur and Raipur; it has cotton, oil and rice mills. Area 872 sq. m. Pop. 202,973.



Nanking, China. Avenue of giant statues, leading to the royal tombs of the Ming dynasty

**Nandi.** Nilotic negro people in Nyanza prov., Kenya. Migrant from Lake Rudolf, they colonised the Nandi plateau, 8,000 ft. high, and other forested uplands to N. and S. They have imparted their language and culture to the Dorobo hunters of Masailand. The main type, short, small-faced, prognathous negroids, are mingled with a caucasoid, big-nosed, straight-jawed type betraying Galla contact. In consequence of their depredations on the railways and telegraphs they were removed in 1906 to reserves. See Negro.

**Nanga Parbat.** Peak of the Himalaya Mts., Kashmir. It rises to 26,629 ft. in the Zaskar Range in the S.W. of Baltistan. Here the Indus flowing N.W. through Baltistan makes its great bend round the mighty peak, to flow W. and then S.W. through the Punjab.

**Nankeen.** Yellowish cotton fabric said to have been first made at Nanking, China. Originally it was made from *Gossypium religiosum*, a brownish-yellow native cotton, and was undyed. Nankeen is now made in Europe and other countries from ordinary cotton, dyed yellow, and is exported to China.

**Nanking.** Capital of Kiangsu prov., China. It is situated on the Yang-tse, though the walled city lies away from the river, nearly 200 m. from the mouth. Its port is accessible to ocean-going steamers all the year round. The circuit of the walls is over 20 m. Near by are the Ming tombs, including that of the founder of the dynasty, Hung Wo.

The town is said to have given its name to Nankeen cloth. Among its other manufactures are satin crêpe and Indian ink. Government establishments include an arsenal, a powder works, and a mint. There are a university, a naval college,

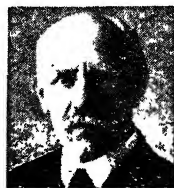
and an agricultural experimental station, with a school of forestry. The town is connected by rly. with Shanghai, and Pukow, the port on the opposite bank of the Yang-tse, is the terminus of the Tientsin Pukow rly.

Dating from the 5th or 6th century B.C., Nanking (meaning S. capital) was the capital of China for several periods between A.D. 222 and 501, and again from the accession of the Ming dynasty in 1368, until their removal to Peking (Peiping) in 1403. The

city was nearly destroyed by the Taipings, who took it in 1853, and overthrew the famous Porcelain Tower. It was their capital until 1865, and gradually recovered. At Nanking the first treaty between the U.K. and China was signed, 1842. In 1928 the victorious Nationalists moved the capital from Peiping to Nanking, but, after having been repeatedly bombed by Japanese aircraft during 1937, it was captured on Dec. 13, 1937, British and American gunboats being sunk during the final attack. During the Japanese occupation it was for a time the capital of the Japanese-sponsored Chinese government under Wang Chung-Wei. On Aug. 25, 1945, Chinese nationalist troops entered Nanking, where the formal surrender of the Japanese forces in China took place on Sept. 5. In 1946 the nationalist govt. again made Nanking the capital. Pop. 1,100,000. See China in N.V.

**Nanning.** City of China, in Kwangsi prov. Standing on the Si Kiang or West River, 320 m. W. by S. of Canton, it was opened as a treaty port in 1907. Pop. 52,000.

**Nansen, FRIDTJOF** (1861-1930). Norwegian explorer and administrator. Born near Christiania (Oslo). Oct. 10, 1861, he graduated from Christiania university and was appointed curator of the natural history museum at Bergen. In 1888-89 he



Fridtjof Nansen, Norwegian explorer

crossed the Greenland icefield from E. to W., studying the people and natural history, as recorded in *The First Crossing of Greenland* (1890) and *Eskimo Life* (1893).



In 1893 he embarked in the Fram on an Arctic polar expedition. Skirting the N. coasts of Europe and Asia, he allowed his vessel to drift with an icefloe, and then, with one companion, he pushed across the ice on foot until he reached 86° 14' N., the farthest point then attained. He wintered in Franz Joseph Land, and was ultimately picked up in 1896 by the Jackson-Harmsworth expedition. Upon his return to Norway his book *Farthest North* (1897) became a best-seller. He lectured in London and other places on his Arctic experiences and observations. From 1905 he took an active part in Norwegian politics, and had much to do with the separation of Norway from Sweden. He was appointed the first Norwegian ambassador to Great Britain, resigning in 1908 to carry out oceanographic research in the Arctic. In 1917 he went to the U.S.A. as head of a govt. mission to negotiate food supplies, and in 1919 became chief Norwegian delegate to the League of Nations. In 1920 he was appointed director of an international organization for repatriating ex-prisoners of war from Siberia. This organization developed into the Nansen office (*v.i.*). During 1921-23 he was also director of famine relief in Russia, and was responsible for feeding 12,000,000 persons. He was awarded the Nobel peace prize in 1923 and devoted the money to the furtherance of demonstration farms he established at Saratov. In 1921 he had been appointed prof. of oceanography at Christiania (Oslo) university, and in 1926 he refused the premiership of Norway. In 1928 he published *Armenia and the Near East*. He died suddenly at Oslo, May 13, 1930, preparing an airship expedition to the N. Pole. *Consult* Lives, E. S. Starritt, 1930; J. Sorensen, 1932; E. E. Reynolds, 1932; C. Turley, 1933.

**Nansen Office.** Former international organization for the assistance of refugees. It evolved from the refugee work of the League of Nations, begun in 1920 under the direction of Nansen (*v.s.*), and upon his death in 1930 was constituted as an autonomous organization by the league. It was primarily concerned with 3,000,000 White Russians, many of whom were settled in Poland and China; 800,000 Armenians, settled largely in Near Eastern countries; 1,500,000 Greeks, expelled from nationalist Turkey and eventually established in Greece in exchange for Turks living in that country,

and some thousands of Assyrians. Large numbers of refugees from the Saar (*q.v.*) were established in France and the Argentine.

The Nansen office was responsible for collecting information regarding the moral and material condition of the refugees and for assisting them to find employment and opportunities for settlement. Schools, hospitals, and churches were built, a children's home maintained near Paris, and a home for the aged at Nice. Until they were able to acquire a definite nationality, refugees were provided with temporary identity papers called Nansen passports (*v.i.*). The work of the office was financed by a grant from the league, subsidies from governments, gifts from institutions and individuals, and the sale of surcharged postage stamps in France and Norway. In 1937 the humanitarian activities of the Nansen office were recognized by the award of the Nobel peace prize. In 1938, when the number of refugees under its control had fallen below 5,000, the office was closed and its work transferred to a high commissioner appointed by the League of Nations. *See* Refugees.

**Nansen Passport.** Identity document devised by Fridtjof Nansen (*q.v.*) and granted through the Nansen Office (*v.s.*) to stateless refugees. The "passport" established a provisional legal status for the holder until such time as he could acquire a definite nationality in the country in which he had settled. A Nansen passport was recognized by most governments and gave the holder a limited freedom of movement, enabled him to obtain small loans of money, and entitled him to reductions on rail and steamer fares. The passports ceased to be valid when the Nansen Office closed in 1938.

**Nanshan.** Mt. range of Asia. It comprises parallel ridges between the Gobi desert and the Tsaidam Swamp on the N.E. boundary of Tibet. The range, alt. 14,000-16,000 ft., which has a general direction N.W. and S.E., is a continuation of the Kwenlun and Altyn Tagh systems. Among the names given to sections of the Nanshan Range are the Alexander III, the Humboldt, the Ritter, and the Amne-Machin Mts.

There is a second range of the same name S. of the Yangtse, running parallel with the coast from Kwangsi to Chekiang prov. Its greatest alt. is 9,500 ft.

**Nanshan, BATTLE OF.** Fight between the Russians and the Japanese, May 26 1904. Japan

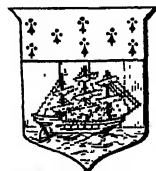
having Korea in her hands, determined to capture Port Arthur, and this battle virtually marks the beginning of the siege. The second army under Oku had been embarked during April and began to land near Pitzewu on May 5, but it took nearly three weeks for the whole disembarkation and for the extension across the peninsula.

Having captured Kinchow, Oku provided a guard to the N. against a relieving force, and, turning to the S., found himself faced by the naturally strong position of Nanshan, a line of hills, 300 ft. high in the centre, across the narrowest part of the peninsula, both flanks resting on the sea, the left (W.) ending in precipitous cliffs, and the right supported by the fire of Russian gunboats. The position was held by about 12,000 Russians, carefully entrenched, and with their front covered by formidable obstacles, but was engaged by the Japanese. Their first rush at dawn on May 26 only carried them up to the beginning of the obstacles, but through this day of stress they made nine successive attempts to carry the position, losing heavily, in the effort to find a weak flank. Towards evening an attack pushed strenuously all along the line carried out the scheme. A division on their right, powerfully aided by artillery fire from land and sea, waded along the coast, and swarming up the cliffs, turned the Russian left.

Stössel, in command at Port Arthur, although only 3,000 of his men had actually been engaged, and he had lost about 1,500 men, ordered a retirement to the prepared positions in rear. It was a decided Japanese victory, for they had captured many guns, and were now in a position to begin the investment of Port Arthur. *See* Port Arthur; Russo-Japanese War.

**Nanterre.** Village of France. It is 5½ m. N.W. of Paris, and was the birthplace of S. Geneviève, whose prayers are said to have preserved the city from Attila. The church contains an alleged fragment of the true cross, an object of veneration by pilgrims for centuries. Pop. 41,860. *See* Geneviève.

**Nantes.** City of France. It is the capital of the dept. of Loire-Inférieure, and is built on several islands of the Loire, 248 m. S.W. of Paris. It is the 8th largest town in France, and although 35 m. from



Nantes arm.

the sea, it is a great port, with an annual turnover between 1.5 and 2 million tons, a ship building centre, and a naval arsenal. The quays extend for 2 m. and before the Second Great War it had 21 bridges across the river. The seat of a bishopric from the 4th century, it has the cathedral of S. Pierre, built in the 6th century, but

Nantes, meeting little opposition from the Germans, who had, however, carried out demolitions, including that of the old Pont de la Vendée.

**Nantes, EDICT OF.** Law or edict issued in 1598 by Henry IV of France, giving liberty of worship to the Huguenots. The accession of the Protestant Henry of Navarre to the throne of France in 1589 and his conversion to Roman Catholicism brought no immediate relief to the Huguenots, who still suffered serious disabilities, despite the various pacifications attempted in the course of nearly 40 years of religious warfare. At length meetings were arranged between the king and the Protestant leaders, and the edict signed at Nantes by Henry, April 15, 1598, contained a large number of articles, the effect of which was to give civil and some religious liberty to the Huguenots.

They could hold meetings for worship in certain specified places, although not in Paris. They could fill official positions and enter universities, colleges, etc., while their pastors were paid by the state. They could trade freely and inherit property. As security they were given 100 places as cities of refuge, and disputes about the edict were heard before special courts in which they were represented among the judges. These courts were connected with the various parlements. The edict was revoked by Louis XIV in Oct., 1685, after the Huguenots had been steadily losing their rights under it for some years. See France: History.

**Nanteuil, ROBERT (c. 1623-78).** French engraver. He was born at Reims and about 1646 entered the studio

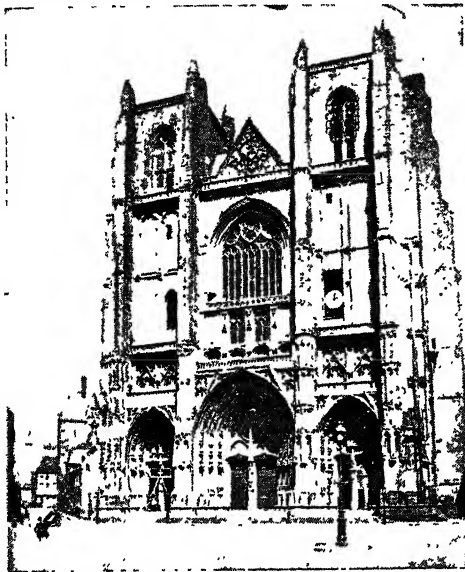
of Nicholas Regnesson at Paris. In 1658 he was appointed engraver and designer to the king. By this time he had evolved a clear and beautiful method of engraving, and his crayon portraits were also held in high esteem.

**Nantgarw.** Village of Glamorganshire, Wales. In the valley of the Taff, it is 5 m. from Cardiff. It gives its name to a variety of china. In 1811 Billingsley, the flower painter, opened a factory here. He had been associated with Duesbury at the famous works where Crown Derby was produced. Thence he went, in 1796, to Pinxton, and in 1803 to Torksey, opening a pottery in both places, and finally to Nantgarw. His Nantgarw pottery is unique, the fine body of even texture being more like glass than china. See Pottery.

**Nanticoke.** City of Pennsylvania, U.S.A., in Luzerne co. It stands on the Susquehanna R., 18 m. S.W. of Wilkes-Barre, and served by the Pennsylvania and other rlys. Anthracite is extensively worked in the area—among the world's richest coal-mining districts. It owed its foundation to the water-power provided by the falls here, and industrial establishments include hosiery, knitting, silk, timber, flour, and grist mills, as well as factories manufacturing mining and agricultural equipment. About 10,000 miners work in the neighbourhood. Nanticoke was incorporated as a borough in 1874, and as a city in 1926. Pop. 24,387.

**Nantucket.** Town of Massachusetts U.S.A., co. seat of Nantucket co. It stands on the N. coast of Nantucket island which, with adjacent islands of Tucker-nuck and Muskeget, forms the co., and has steamboat communication ports on the mainland and neighbouring islands.

The island, which is 15 m. long and 3 m. wide, but which has 88 m. of coast-line, is situated 30 m. S.E. of Cape Cod and Buzzard's Bay. Owing to the influence of the Gulf Stream, it has warmer summers and milder winters than the adjacent mainland. An important whaling centre in the 18th and early 19th centuries, its population was chiefly Quaker, and in 1835 it was the state's third richest commercial centre. It is now a favourite resort, and retains many of its original houses, e.g. the oldest house built in 1686, the Old Mill, the South or Unitarian church, the Historical Museum, and the Whaling Museum. It was first settled in 1659. Pop. 3,401.



Nantes, France. West front of the cathedral of S. Pierre, with its elaborately ornamented portals

extensively rebuilt at later dates. Other interesting buildings are the church of S. James (12th century), the prefecture (1763), the stock exchange (1792), and a number of ancient houses. The castle of the dukes of Brittany dates in part from the 14th century. The main industries, apart from those associated with the port, are engineering, paper-making, chemical manufactures, and food preserving.

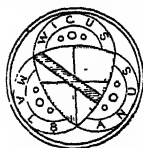
Nantes was the capital of the Gallic tribe of the Namnetes, and was for long ruled by Breton dukes. It came under French rule in 1491, and there, in 1598, Henry IV signed the famous edict (*v.i.*) granting religious freedom to the Huguenots. Pop. 200,265.

Nantes was one of the ports used by the B.E.F. in Sept., 1939, and it served also as a maintenance depot. On June 20, 1940, the port was taken by German troops and included in the occupied zone after the Franco-German armistice. Allied aircraft made several attacks on the dock area during the German occupation. On August 9, 1944, U.S. armoured columns entered



Robert Nanteuil, French engraver  
Self-portrait

**Nantwich.** Urban dist. and market town of Cheshire, England. It stands on the Weaver, 161 m.



Nantwich arms

N.W. of London, and 4 m. S.W. of Crewe, and is served by rly. The chief building is the old cruciform church of S. Mary and S. Nicholas. There are a 17th century grammar school and some old houses. The industries include the manufacture of leather goods and high-class clothing. Nantwich is a hunting centre and has a spa. It had fairs and markets in the Middle Ages, and salt, of which industry it was a centre, was worked early. The works were especially prosperous in the 16th-18th centuries, after which they declined and have now disappeared. Shoes and gloves were also made at that time. Market days, Thurs. and Sat. Pop. 9,000. *Consult* History of Nantwich, J. Hall, 1883.

#### Nantyglo and

**Blaina.** Urban dist. of Monmouthshire, England. It is 7 m. W.S.W. of Abergavenny, on the rly., and is a coal-mining area. The water supply is controlled by the council. Pop. 11,410.

**Naomi.** Character in the O.T. book of Ruth (*q.v.*). Wife of Elimelech, of Bethlehem-Judah, she lost her husband and two sons in the land of Moab, whither the family had fled through famine. Back in her native land, her many sufferings caused her to say, Call me not Naomi (pleasant), call me Mara (bitter). Ruth was her daughter-in-law.

**Naoroji, Dadabhai** (1825-1917). Indian politician. Born at Bombay, Sept. 4, 1825, the son of a Parsee priest, he was educated at Elphinstone school and college. He returned to it in 1854-55 as professor of mathematics and natural philosophy. Then he went to England to engage in business. Elected in 1892 as Liberal M.P. for Central Finsbury, he was the first Indian member to sit in the British house of commons, but lost his seat in 1895. In 1886 and 1893 he was president of the Indian national congress. He published *Poverty and Un-British Rule in India*, 1901. He died July 1, 1917.

**Nap** or **NAPOLEON.** Card game, usually for three to five players. It is played with a full pack, the cards bearing the same value as in whist. The dealer gives five cards to each player, the one on his left having first call. There are calls of two tricks, *misère* (in which the caller undertakes to lose every trick), three, four, and five tricks, the last being known as *nap*. The player calling the highest leads, and endeavours to make his tricks; he chooses his own trumps, the first card he plays indicating the suit. If he makes the contract he receives payment according to the number of his call; or, failing, has to pay each player in the same proportion. It is usual for the caller of *nap*, when successful, to be paid double stakes. Also it is



Nantwich, Cheshire. Cruciform parish church of S. Mary and S. Nicholas

sometimes agreed that a player going *nap* may have the option of picking up the top card of the remainder of the pack and substituting it for one of the five he originally received from the dealer.

**Napata.** Ancient Nubian city on the right bank of the Nile, under Mount Barkal, below the 4th cataract. An early centre of Sudanese trade, it became the S. frontier of XVIIIth-dynasty Egypt, and immigrant Theban priests established control over the independent Ethiopian kingdom which gave Egypt its XXVth dynasty. The slender pyramids, Amon temple, and funerary shrine of Taharka (2 Kings 19) are essentially Egyptian. *See* Meroë.

**Naphtali.** Name of one of the ten northern tribes of Israel, and of its traditional ancestor, the sixth son of Jacob. He was Bilhah's second son (Gen. 30). The tribe of Naphtali, "a hind let loose," was settled in fertile territory W. and N.W. of the Sea of Galilee, and was among the first to be led into captivity (2 Kings 15; Isaiah 9).

**Naphtha.** Word of Persian origin, referring originally to certain petroleum seepages in Persia. It is now applied to volatile

hydrocarbons obtained by the distillation of crude petroleum, shale oil, and coal tar. Petroleum naphthas are produced by simple distillation of crude oil and, after refining, are redistilled to give fractions of very close boiling range, *e.g.* the 90-120° C. cut which is used for dry cleaning. Naphtha from shale oil is the light distillate occurring during the fractionation of the crude shale oil obtained by retorting oil shale (*q.v.*). Coal tar or solvent naphtha consists of the higher boiling fractions of light oil, the first cut in the distillation of crude tar oil. Naphthas are chiefly used as industrial solvents; the shale oil naphtha is also the basis of a motor spirit.

**Naphthalene.** White solid hydrocarbon, with a characteristic smell, one of the products of the dry distillation of coal. The coal tar of gas works is the chief source of naphthalene. It was discovered by Garden in 1819 in coal tar, and its chemical composition was investigated in 1826 by Faraday, who assigned to it the formula  $C_{10}H_8$ . It forms from 5 to 10 p.c. by weight of crude coal tar, and is obtained on the large scale from the "middle-oil" fraction obtained by distilling coal tar, the oil containing about 30 p.c. of naphthalene. The crude product is purified by treatment with caustic soda to remove phenol and again distilling. The crystalline mass obtained in this way is separated from any adhering oil by means of a filter press.

Naphthalene is employed for making sulphonie acids, naphthols, and naphthylamines needed in the dyeing industry, and especially for the manufacture of phthalic acid required for synthetic indigo and eosin dyes. It is used also for enriching, or carbureting, water-gas to make it luminous, and as alcohocarbon for increasing the luminosity of coal gas. Naphthalene is a powerful antiseptic, and is widely used to preserve woollen goods and furs from moths.

**Naphthol, ALPHA AND BETA.** Solid hydrocarbons, closely related to the phenols in their chemical properties. The chemical formula for the naphthols is  $C_{10}H_7OH$ . Alpha-naphthol is made by fusing naphthalene monosulphonic acid with caustic soda. Beta-naphthol is prepared from beta-naphthalene sulphonie acid. Both are powerful antiseptics, and are used as the starting-point in the manufacture of important aniline dyes. Alpha-naphthol will preserve the albumen used in calico printing.

**Naphthylamine** OR AMIDO-NAPHTHALENE. Hydrocarbon with the chemical formula  $C_{10}H_7N$ . There are two naphthylamines, alpha and beta. Alpha-naphthylamine has a repulsive odour, while beta-naphthylamine is odourless. Both are employed in the manufacture of aniline dyes.

**Napier.** Town and port of North Island, New Zealand. The capital of Hawke's Bay district, it is in a pastoral country. It has rly. and steamer communication with Wellington (200 m.) and Auckland (372 m.). Pop. 20,297.

**Napier, BARON.** Scottish title. The first holder was Sir Archibald Napier 1576-1645, 9th baron

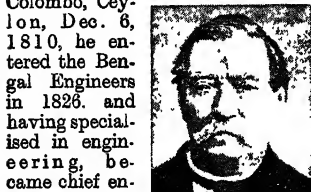


1st Baron Napier,  
Scottish  
agriculturist

Merchiston, who gained celebrity in Scotland for his agricultural experiments, and followed James I to England in 1603. In 1623 he became lord of session, and in 1627 was created baron Napier of Merchiston. Both he and his son, Archibald (d. 1658), 2nd baron, were closely associated with Montrose.

His son, Archibald, the 3rd baron, died unmarried in 1633, when his nephew, Thomas Nicolson, succeeded to the title. The next holder was the 3rd lord's sister, Margaret, from whom it descended to her grandson, Francis Scott, who took the name of Napier. The title is still held by his descendant, Baron Napier and Ettrick.

**Napier of MAGDALA, ROBERT CORNELIS NAPIER, 1st BARON** (1810-90). British soldier. Born at Colombo, Ceylon, Dec. 6,



Baron Napier of  
Magdala,  
British soldier

1810, he entered the Bengal Engineers in 1826, and having specialised in engineering, became chief engineer of the Punjab in 1849. During the Mutiny his work as chief engineer to Sir Colin Campbell brought him a K.C.B. In the Chinese War, 1860, he held a command, but his most notable military service was his conduct of the campaign in Abyssinia, 1868, which brought him a peerage. From 1870-76 Napier was commander-in-chief in India. He died Jan. 14, 1890. See Hist. of the Abyssinian Expedition, C. R. Markham. 1869.

**Napier, SIR CHARLES** (1786-1860). British admiral. Born March 6, 1786, he entered the navy in 1799, saw active service, and in 1810 was with the army in the Peninsula. Returning to the navy, he performed some daring exploits in the Mediterranean.



Sir Charles Napier,  
British admiral

In 1833 he was given command of the Portuguese fleet in opposition to Dom Miguel, whose squadron he defeated. He was hailed as the liberator of the country and raised to the Portuguese peerage, but resigned on the rejection of his proposals for naval reform. He commanded the troops ashore on the Syrian coast in 1840, and was made a K.C.B. for the capture of Acre, where he was second-in-command. His command of the Baltic Fleet in 1854 was only partially successful. He died Nov. 6, 1860.

**Bibliography.** War in Portugal, 1836; War in Syria, 1842; The Navy: Its Past and Present State, 1851; Life and Correspondence, Gen. E. Napier, 2 vols., 1862.

**Napier, SIR CHARLES JAMES** (1782-1853). British soldier. Born in Whitehall, London, Aug. 10,

1782, a grandson of the 5th Lord Napier of Merchiston, he entered the army, 33rd regiment, in 1794, but, except when dealing with the insurgents in Ireland, saw no active service until 1808. He commanded the 50th Foot in the retreat to Corunna, was seriously wounded, and taken prisoner. Released on parole, he was formally exchanged in 1810, and in the following year returned to the Peninsula. In 1815 he took part in the Waterloo campaign, though not present at the actual battle. He was appointed governor of Cephalonia in 1822, but his life was comparatively uneventful until, in 1841, he sailed for India to take command in Sind.

After a campaign Sind was annexed, and Napier was appointed governor of the new province, to the reorganization of which he devoted himself successfully. He rendered further military service in the Sikh war of 1843, and was commander-in-chief in India, 1849-51. He died at Oaklands, near Portsmouth, Aug. 29, 1853. His

life was written by his brother, Sir William, while his own writings include Lights and Shadows of Military Life, 1840.

**Bibliography.** Lives, W. F. P. Napier, 4 vols., 1857; W. N. Bruce, 1885; W. F. Butler, 1890; Records of the Indian Command of Gen. Sir C. J. Napier, J. Mawson, 1851.

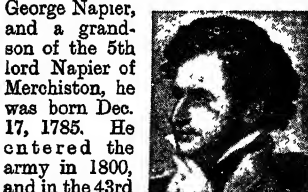
**Napier, JOHN** (1550-1617). Scottish mathematician. Born at Merchiston Castle, near Edinburgh, and afterwards the 8th laird of Merchiston, his first mathematical work, De Arte Logistica, suggested that he had discovered a method of solving equations of the second and higher degrees. About 1594 he began to lay the foundations of his great discovery, logarithms, upon which he worked for the next twenty years. In connexion with them he suggested the present notation for decimals. His tables were published 1614, under the title Mirifici Logarithmorum Canonis Descriptio. He died April 4, 1617. See Briggs, H.; Logarithms.



John Napier,  
mathematician

**Napier, SIR WILLIAM FRANCIS PATRICK** (1785-1860). British soldier and historian. A son of George Napier, and a grandson of the 5th lord Napier of Merchiston, he was born Dec. 17, 1785. He entered the army in 1800, and in the 43rd regiment served at the siege of Copenhagen, 1807, before proceeding to Spain, where he was present at Corunna. In 1813-14 he was in command of his regiment which formed part of the Light Brigade. Knighted in 1843, he was promoted general in 1859, and died Feb. 10, 1860. Napier is the author of one of the greatest military histories ever written. His History of the Peninsular War was begun in 1823, and the six volumes appeared between 1828 and 1840.

**Naples** (Ital. *Napoli*). Maritime prov. of W. Italy, in Campania. It curves round the Bay of Naples, and includes the islands of Ischia, Capri, and Procida. A fertile plain in the N., elsewhere it is mountainous, rising in Mt. Vesuvius to about 4,000 ft. It terminates in the S.W. in the promontory of Sorrento. Area 351 sq. m. Pop. 2,000,000.

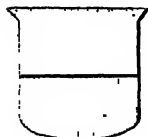


Sir W. Napier,  
British historian  
From a miniature



Naples. A street scene in the Santa Lucia quarter

**Naples** (Ital. *Napoli*). City and port of Italy and capital of the prov. of Naples. Stretching along



Naples arms

the Bay of Naples, it is perhaps the most beautifully situated city in Europe. Seaward, the bay is protected by islands, Procida, Ischia, and Capri. Inland, a mountain chain hemming in the Neapolitan Campagna, runs down to Sorrento. Rising out of this rich plain the vast cone of Vesuvius towers over the E. suburbs, Portici, Resina, and Torre del Greco, whose villas, vineyards, and orange groves are set upon deposits of lava. To the W. lie the volcanic headland of Posilipo, and Pozzuoli, pierced by sulphurous grottoes and tunnels, the volcano Solfatara, Baia, and the promontory of Miseno. Close to Baia, a volcanic eruption in 1583 flung up Monte Nuovo in a single night, and almost drained the Lucrine lake whfch, with Lake Avernus, formed the Portus Julius of the Roman fleet. The climate is delightful, the mean temp. varying from 47° F. in Jan. to 76° F. in

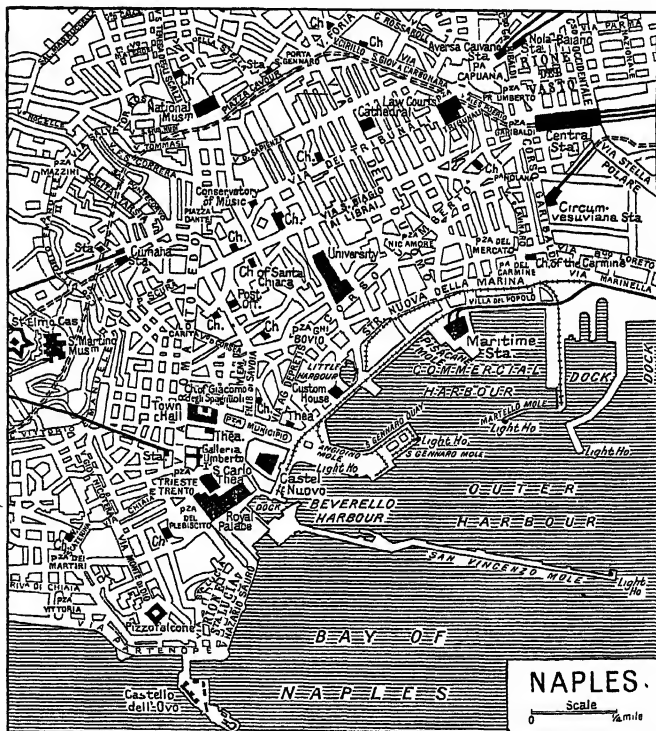
July. The rainy season lasts from Oct. to March.

The port, always a busy one, was wrecked by bombing and by German demolitions when, during the Second Great War, the Allies entered the city Oct. 1, 1943, after the Germans had withdrawn; 70 ships had been sunk in the harbour. In less than three weeks Allied engineers had made it usable, and for a time it became the port with the biggest turnover in the world. Naples was the principal mounting port for both the assault convoy and the follow-up convoys in the Allied landings in the S. of France, Aug. 15, 1944. U.S. forces remained in control of the port until it was returned to Italian administration March 1, 1946.

The city is a manufacturing centre, making ships, cars, locomotives, glass, cotton, wool, gloves.

summer lounges, give the town an almost eastern appearance. The Porta Capuana, with its Renaissance gateway, 1484 and two round towers, indicate the vanished walls. Three narrow, straight streets, piercing a quadrangle of crooked alleys, are the Decuman Ways of the Roman town.

The modern quarter, built along the magnificent curve of the Riviera de Chiaia, lies to the W. of a mountain ridge which runs down from Capodimonte and the Castle of S. Elmo to the Pizzofalcone promontory. Along this Riviera lie the Villa Nazionale, a charming public garden bordered by the Via Caracciolo, and the famous Marine aquarium belonging to the zoological station founded 1872. At the foot of Pizzofalcone is the historic egg-shaped Castello dell'Ovo, begun 1154 on an islet.



Naples. Plan of the central part of the city showing docks and harbour

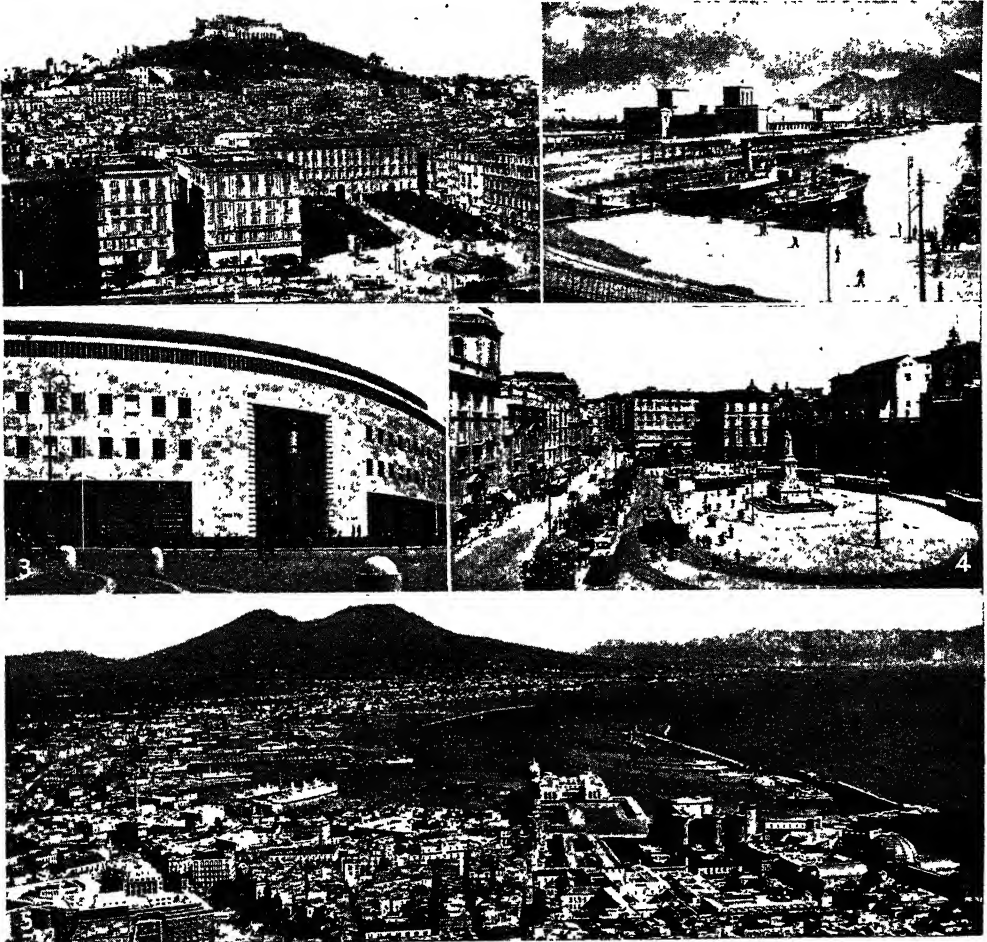
perfumes, linen, and silk. The chief imports are coal, steel, lumber, grain, cotton wool, leather, oils, wines, and chemicals: the chief exports, wine, brandy, fruits, nuts, paper, hemp, and cereals. Pop. 1,015,000.

Architecturally Naples has little of interest. The flat roofs of the houses (*astrici*) which serve as

From the Corso Vittorio Emanuele, which winds along the hillside, grand views across the town and harbour are obtained, though the finest of all is afforded by Belvedere, in the Carthusian monastery of San Martino, within the walls of S. Elmo.

The remains of the medieval city are among the narrow fetid streets





1. The Piazza Municipio: here are an equestrian statue of Victor Emmanuel II, and at the end, the Town Hall; in the background can be seen the S. Elmo Castle which was built in 1343 and enlarged later. 2. The maritime station.

3. The new post office. 4. Piazza Dante, with the Vittorio Emanuele school on the right, and a statue of Dante, erected 1872, in the centre. 5. Panorama of the city and bay with Mt. Vesuvius in the background

#### NAPLES: VIEWS OF THE CITY AND SOME OF ITS ARCHITECTURAL FEATURES

of the commercial part of the town to the E. of the ridge. The Strada Sta. Lucia is a typical centre of the noisy, dirty, picturesque, and surprising life of the poorer inhabitants. After the cholera epidemic of 1884 among the densely populated and insanitary streets, a huge reconstruction was begun. The streets were widened, electric trams installed, and a new water supply and drainage system introduced.

The Via Roma, the old Via Toledo, running N. and S., is the main fashionable thoroughfare. It leads down from the Bellini theatre, the Piazza Dante, and the museum to the Palazzo Reale and the old round towers of the Castel Nuovo, 1283, renovated 1905. Close at hand is the San Carlo theatre.

The national museum, formerly the seat of the university, contains the Farnese and other collections (Farnese Bull, Dying Gladiator, Hercules, etc.), and innumerable masterpieces of antiquity and relics from the excavations at Herculaneum, Pompeii, and elsewhere. Some of the contents, stored for safety at Monte Cassino, were lost in the action there, 1944.

The cathedral, built 1272-1323, but repeatedly modernised, contains the tombs of Charles of Anjou and Pope Innocent IV, as well as the alleged blood of S. Januarius, now the patron of the cathedral, which liquefies thrice a year, portending good or evil fortune, according as the process is rapid or slow. The basilica of S. Restituta, on the

site of a temple of Apollo, adjoins the W. aisle.

The coffins of the house of Anjou lie in the sacristy of S. Domenico Maggiore, closely connected with S. Thomas Aquinas. A tall brick campanile in the Strada Tribunali is the remnant of a church built by Bishop Pomponius in 514. In San Lorenzo Boccaccio first beheld and loved Fiammetta. Behind S. Genaro there are interesting catacombs of the 1st century. At the university, founded by the emperor Frederick II in 1224, S. Thomas Aquinas lectured. Reorganized in 1781, it had before the Second Great War over 7,000 students. The Germans deliberately burned the contents of the university library. In the Piazza

Mercato, outside the church of Santa Maria del Carmine (which was badly shaken by bombing from the air in the Second Great War) Conradino was executed, and was buried in the church. The church of S. Chiara, burnt out by incendiary bombs, was famous for its sculptures by Tino da Camaino.

Gianbattista Vico, the famous 17th century philosopher, lived in Naples; the poet Giacomo Leopardi died here from cholera; and Benedetto Croce (b. 1866), philosopher and courageous advocate of liberalism under the Fascists, upheld Neapolitan learning.

Naples was founded by Greek colonists and was first called *Parthenopé*, or Virgin City, after a siren said to have been drowned upon the coast. Re-settled by later emigrants from Greece, it was named *Neapolis*, or the New City. Conquered by the Romans, 326 B.C., the beauty of its site and the mineral springs of Baiae, in the western corner of the gulf of Pozzuoli, rendered it and its environs a favourite seaside resort under the Empire. Baths and villas, built along the shore, encroached even upon the sea. Marius, Pompey, and Julius Caesar had houses at Baiae. Horace loved the place; and here Virgil lived, and chose to be buried. The tomb of Virgil is placed in the Grotta di Sejanio, which was cut through the rock of the hill of Posilipo in Roman times.

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#### The Kingdom of Naples

Naples was also the capital and name city of a kingdom which existed 1138-1860. The Goths, who had occupied Naples on the fall of the Western Empire, were expelled by Belisarius on behalf of Justinian in 536. It was retaken by the Goths under Totila, 543, but recovered by Narses ten years later. As a Byzantine duchy, Naples opposed the Lombard duchy of Benevento, and became practically independent. Enriched by sea-borne commerce with the East, before Venice, Pisa, Leghorn, and Genoa supplanted her, the maritime city offered a tempting prey to the Saracens from Sicily. It was conquered by Roger of Sicily in 1130, and then became a kingdom.

The Norman kingdom of Naples and Sicily, which included all S. Italy, held as a fief of the Holy See, passed through Constance, the

Norman heiress, to the Hohenstaufen line. The emperor Frederick II was succeeded in the Two Sicilies, as the kingdom was called, by his illegitimate son, Manfred. The pope, however, offered the inheritance of Naples to Charles of Anjou, by whom Manfred was defeated and slain at Benevento, 1266.

The Angevins continued to hold the kingdom of Naples after the Sicilian Vespers had ousted them from Sicily. The dynasty died out with Joanna II, whose evil life still remains a byword. Alfonso V, king of Aragon and Sicily, whom she had once adopted as heir, seized the kingdom upon her death, 1435. After a long struggle with the French, he was acknowledged king of the Two Sicilies in 1443, and bequeathed his Neapolitan kingdom to his cruel and avaricious bastard, Ferrante, or Ferdinand, 1458.

#### French and Spanish Struggles

Joanna I, having no issue, had finally adopted her cousin Louis, duke of Anjou. His rights, passing to Louis XI and Charles VIII of France, formed the pretext for the French invasion of Italy. Charles VIII occupied Naples Feb.-May, 1495. When the French were expelled from Italy, the Aragonese returned to Naples. But Louis XII joined with Ferdinand of Spain against his kinsman Frederick, took and sacked the capital. They fell out over the spoils. Thereupon the Spanish general, Gonzalo de Cordova, ejected the French after the battle of the Garigliano, 1503, and Naples became henceforth a Spanish province.

Before the battle of Lepanto, 1571, restored Spanish supremacy in the Mediterranean, Naples suffered much from raids by the Turks. In 1647 occurred the revolt of Masaniello. Another rising, under Gennaro Annese, was ruthlessly suppressed by Don John of Austria, to whom Gennaro betrayed the city, after the duke of Guise had come, at his invitation, to regain the possessions of the House of Anjou. By the war of the Spanish Succession, Naples, wrested from Spain, passed to the Austrian Emperor, Charles VI, in 1713. But during the war of the Polish Succession, Don Carlos, second son of the Bourbon Philip of Spain, invaded the Two Sicilies, and by the treaty of Vienna, 1738, was recognized as King Charles II. Under the Spanish Bourbons, Naples remained in a state of medieval barbarism. The people were oppressed, poor, ignorant, and lazy; the city teemed with *lazzaroni*, the country with bandits, beggars, and priests. An at-

tempt by Ferdinand IV to expel the French Republican armies from the Papal States was followed by the creation of the Parthenopean Republic in Jan., 1799.

#### Bourbon Restoration

Ferdinand was restored next year by a Calabrian army under Cardinal Ruffo, supported by the British fleet, and even after Marengio, thanks to the intervention of Paul I of Russia, he was still allowed to reign. Napoleon, however, turned out the Bourbons in 1806, and made first his brother Joseph, and then his general, Joachim Murat, king of the Two Sicilies, 1808. Murat, in spite of Napoleon's military and financial exactions, introduced some reforms before he attempted to lead a revolt in favour of Napoleon, and was forced to flee, May, 1815.

Ferdinand IV, returning as Ferdinand I, king of the Two Sicilies, gave fair promises of freedom and reform, while secretly binding himself to Austria not to introduce constitutional changes other than those allowed in the Austrian dominions in Italy. The administration remained corrupt and oppressive as ever. A military rising in 1820, joined by the members of the Carbonari (q.v.), and led by General Pepe, wrung the concession of a constitution from the treacherous tyrant; but the Bourbon absolutism was restored by Austrian bayonets. This oppressive and despotic government was continued by Francis I and Ferdinand II, nicknamed Bomba, who quelled a rebellion in 1828, and in Jan., 1848, yielding to a series of revolutionary outbreaks, granted a constitution. But after a period of wild disorder, the constitution ended in a massacre, May 15, 1848. Ferdinand took ferocious vengeance upon the champions of liberty, which called forth the denunciations of Gladstone, and was checked by British intervention.

At length the emancipation of Italy put an end to Bourbon misgovernment. Garibaldi, landing in Sicily, made his way to the capital, whence Francis II had fled, Sept. 8, 1860. Disregarding the Mazzinian democrats, he hailed Victor Emmanuel as king of Italy, and the people of Naples and Sicily voted themselves a part of the Sardinian kingdom, Oct. 21.

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**Naples, BAY OF.** Semi-circular opening of the Mediterranean Sea, on the S.W. coast of Italy. Its maximum width is 20 m. between the capes of Miseno on the N. and Campanella on the S. It is backed by Mt. Vesuvius and Monte Sant' Angelo, and on its shores lie the towns of Sorrento, Castellamare, Pozzuoli, Torre del Greco, and Portici, besides the city of Naples. Off the N. extremity of the bay are the islands of Ischia and Procida, and on the S. is Capri.

**Naples Yellow.** Yellow pigment consisting essentially of lead antimonate. The shade depends on the proportion of lead oxide. Compounds of this type have long been used for colouring pottery and glass, e.g. 13th cent. Persian pottery, Babylonian tiles c. 600 B.C.

**Napo.** Large river of S. America. A tributary of the Amazon, it rises N. of the volcano Cotopaxi in Ecuador, and flows generally E.S.E. Near Huiririma it passes

into Peru—the boundary is disputed—and it falls into the Amazon some 50 m. below Iquitos. Its course is about 750 m., nearly 400 m. of which are navigable. Its important affluents include the Coca, Aguarico, and the Curaray. The town of Napo stands on its banks.

**Napoleon.** French gold coin. It was first issued by the great emperor, hence its name. Its



Napoleon. Obverse and reverse of gold coin of Napoleon III.  $\frac{2}{3}$  actual size

value was 20 francs, nominally 15s. 10d., and its weight 6.45 grammes. It replaced the louis d'or and is now obsolete. See Louis

armada seized Malta. Sailing thence, and evading Nelson's pursuit, he landed near Alexandria, took that city by storm, and overthrew the Mamelukes at the battle of the Pyramids.

#### Battle of the Nile

The occupation of Cairo without resistance completed his triumph, and he set to work, with Roman ingenuity and thoroughness, to organize his conquest. In the Institute of Egypt, divided according to subjects, he applied the energies of the French *savants*, whom he brought with him, to the task of exploring Egypt, developing its resources, and beginning a revival of learning. The discovery of the Rosetta Stone and many other relics of the age of the Pharaohs shed distinction on the whole enterprise and stamped it with the originality of Napoleon's genius. But Nelson shore asunder the scheme of a French Oriental empire. At the battle of the Nile, Aug. 1, 1798, he annihilated the French fleet and cut off Bonaparte from communication with France, but Napoleon succeeded in evading the British cruisers and landed in the south of France on Oct. 9, 1799, when the failure of his enterprise was still unknown, and the perils of an Austrian invasion roused discontent with the Directory.

Napoleon accordingly found it easy to concert with Talleyrand, Murat, and Lucien Bonaparte in the overthrow of the Directory. On the ruins he and his friends constructed a strongly personal system in which he, as first consul, held all the executive and much legislative power. But the new personal government ended the strife of factions, and effected much-needed changes by reconciling all but the irreconcilable royalists, by undertaking useful public works, by initiating the codification of French law, and by healing the schism in the Church by what was known as the concordat of April 18, 1802. He thus earned the title of the restorer of the altars, while he restored the prestige of French arms by his brilliant passage of the Alps, and the victory of Marengo. Britain, also, was fain to come to terms in the treaty of Amiens, March 23, 1803.

By instituting prefects in every department Bonaparte curbed democratic local government; while his foundation of the legion of honour paved the way for the subsequent restoration of an order of nobility. Other institutions due to his organizing genius were the bank and university of France.

The vain attempt of the royalists to foment a plot against his life, early in 1804, was cleverly

## NAPOLEON BONAPARTE

J. Holland Rose, Litt.D., Author of *The Life of Napoleon*

*This sketch of the great Corsican is followed by an article on the Napoleonic Campaigns. Further information will be found in the articles Europe; France; French Revolution. See the article Bonaparte and those on Napoleon's marshals, e.g. Murat; Ney; Soult; also Josephine; Nile; Trafalgar, etc.*

Born at Ajaccio, Aug. 15, 1769, the second surviving son of Charles and Letizia Bonaparte (*née* Ramolino), Napoleon came of an Italian stock, long domiciled in Corsica. Sent to school at Brienne, in 1785 he became lieutenant in the La Fère artillery regiment, and in various garrison towns displayed zeal for the service. He passed much of his time on furlough in Corsica during the early period of the Revolution, and his studies of Rousseau disposed him to accept the new democratic doctrines. Long and confused struggles with the Paolist or monarchist faction in that island ended in his disaffection, and, with his family, long fatherless, he fled to France in June, 1793.

#### Royalist Rising of 1795

The new republic badly needed able officers, and the ability with which Napoleon organized and directed its artillery during the siege of royalist Toulon largely contributed to the recapture of that city. Though disgraced and imprisoned for a short time, after the fall of Robespierre, July, 1794, the young Jacobin regained his position in the army, and strengthened it during the campaign in the Italian Riviera. Another sharp setback to his fortunes failed to daunt him. His chance came in Sept., 1795, when the republic was confronted by a serious royalist rising

in Paris, which he helped to crush. Soon after, he was captivated by a fashionable young widow, Josephine de Beauharnais, whom he married.

#### The Italian Campaign

Napoleon then set out on his Italian campaign, in which he forced Sardinia to surrender, defeated a succession of Austrian armies, overran Tuscany, compelled the pope and the king of Naples to sue for peace, and then pushed back the Austrians and made the emperor a suppliant for terms. He crushed Venice and divided its territories between Austria and France. He began the Italian campaign an almost unknown general, received with murmurings by his subordinates. At the end of 1797 he had generals and troops absolutely at his disposal, he had ransacked the museums of Italy for their art treasures, which he sent to the Louvre, he had dictated terms to pope and emperor, and France acknowledged him as her greatest warrior.

The Directory at Paris urged him either to invade England or conquer the East. He chose the latter and secretly prepared a great armada. The military occupation of Rome and of the central cantons of Switzerland having provided part of the funds for the enterprise, he set sail from Toulon in May, 1798, with a large fleet. Strengthened by squadrons from Italy, the

countermined by him and his police; and the result was the capture of the chief plotters. The obsequious senate begged him to re-establish hereditary rule, in order "to defend public liberty, and maintain equality." In Aug., 1802, he had secured the consulate for life, with power to name his successor. On May 18, 1804, he became the emperor Napoleon I, and the coronation ceremony at Notre Dame on Dec. 2, at which the pope poured on the holy oil, showed that all the splendour and prestige of the old monarchy was to reappear. The last traces of the republican constitution soon vanished. These last successes of the autocrat were due to his military triumphs in the war which broke out, first with England, in May, 1803, and with Austria and Russia in the summer of 1805. The struggle with Britain in 1803-5 was entirely naval, ending at Trafalgar.

The years between 1805 and 1815 were passed mainly in warfare. Having received the surrender of Mack and 70,000 Austrians at Ulm, Napoleon occupied Vienna, and gained his greatest victory at Austerlitz. He then bestowed the title of king on some of his South German allies, declared the Holy Roman Empire at an end, and formed the confederation of the Rhine. Prussia rushed to arms in Sept., 1806, only to be utterly overthrown at Jena and Auerstädt, Oct. 14, 1806. When the tsar Alexander I came to her assistance, the Allies were completely routed at Friedland, June 14, 1807.

#### The Disaster of 1812

Master of Central and Western Europe, Napoleon now imposed his brother, Joseph, on the throne of Spain; Britain espoused the cause of the Portuguese and Spanish patriots, and, in the campaigns of 1808-13, Wellington struggled bravely against the armies hurled at him by Napoleon. Thenceforth the Russians and Germans took hope; and in 1812 Napoleon met with his great disaster in Russia.

The remainder of his story must be briefly told. In succession Prussia and Austria rose up against him, and the campaign of 1813 resulted in his expulsion from Germany. Wellington, with British, Spanish, and Portuguese troops, made swift progress in the S., while in the E. the masses of the Allies closed in on Paris. They occupied Paris, and his own marshals and generals finally compelled him to abdicate in favour of his son, Napoleon II, who never reigned. While the fallen emperor retired to Elba, the child and his

mother, Marie Louise of Austria, married to him after he had divorced Josephine at the close of 1810, came under the influence of the Hapsburg court.

The disputes of the powers over the spoils of conquest gave to Napoleon one more chance. He escaped from Elba in Feb., 1815, landed at Antibes, and in a few days entered Paris in triumph; his rival, Louis XVIII, fled into Belgium. But France was resolved to accept Napoleon only as a constitutional monarch, and the powers declared him an outlaw for disturbing the peace of Europe. The emperor's abdication followed Waterloo within a week, and his effort to escape to America having failed, he surrendered to the British government, which sent him to St. Helena.

His last years were spent there with a few chosen comrades, whom he entertained with his unfailing flow of conversation, often captious and querulous, but always brilliant. He also compiled *Memoirs* and *Notes* of much interest but of doubtful veracity. Quarrels with Sir Hudson Lowe were often pushed to unreal and undignified extremes.

#### Why Napoleon Failed

We are now able to see that amidst transcendent qualities there were mingled pettier traits—a devouring egotism, a hard view of life as a series of calculations and chances; above all a profound contempt for the average man, and a disbelief both in religion and in the higher possibilities of progress of the human race. His mechanical view of life, abundantly proved in Gourgaud's *Journal*, reveals the inner reason why he failed to rise to the full height of that unparalleled opportunity offered by the years that followed the French Revolution. On May 5, 1821, Napoleon died at St. Helena. In 1840 his remains were taken to France and laid in a magnificent tomb in the *Hôtel des Invalides*. See *Arcola*; *Cenis*; *Code Napoleon*; *Invalides*; *Longwood*.

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**Napoleon II.** Title given by French imperialists to the only son of Napoleon I, better known as the duke of Reichstadt (q.v.).

**Napoleon III** (1808-73). Emperor of the French. Charles Louis Napoleon Bonaparte was born in



Napoleon III,  
French emperor

Paris, April 20, 1808, the third son of Louis Bonaparte, by Hortense, daughter of Josephine, and was thus nephew to Napoleon I.

On the fall of the empire Hortense took her sons into exile.

His elder brothers having died, the death of the duke of Reichstadt in 1832 made Charles Louis, or Louis Napoleon as he was now styled, head of the Bonapartes. Fostering the Napoleonic legend in France by a series of pamphlets and secret machinations, he organized a mutiny at Strasbourg in 1836, on the failure of which he fled to New York, only to return the following year to Switzerland. In 1838 he moved to London, and in 1840 risked a landing at Boulogne, but was arrested and sent to the fortress of Ham.

Making his escape from Ham in 1846, Louis Napoleon went to London, where he remained until the revolution of 1848. He then began to reap the fruits of his long years of conspiracy and propaganda. Elected a member of the republican assembly in June, he was elected president on Dec. 10 by a majority of five to one. On Dec. 2, 1851, he effected the *coup d'état*. From the 10 years' presidency conferred on him by plebiscite, it was an easy step to the imperial throne, which he ascended Dec. 1, 1852.

The following year Napoleon married Eugénie de Montijo, and established a court which has seldom been surpassed for its splendour and extravagance. He joined England in the Crimean War, 1854-56; he assisted Piedmont to turn the Austrians out of N. Italy in 1859, and gratified French ambition by obtaining Savoy and Nice. Meanwhile things were going from bad to worse. The enmity of the Roman Catholics after his interference in Italy, his failure to establish a Latin empire in Mexico, the increasing hostility of Bismarck, and the necessity of establishing the empire on a firmer foundation than that of popular applause, perplexed Napoleon, who behind his mask of inscrutability was weak and undecided. It was with half-hearted desperation that



1. Painted in 1791, said to be the earliest in existence.  
 2. By Baron Gros. During the first Italian campaign.  
 3. From the miniature by Chatillon. As Emperor.  
 4. By Vernet, now in the Tate Gallery, London.  
 5. After the painting made in 1837 by H. Delaroche. 6. By  
 Francois, after Delaroche, 1845. After abdication,

April 12, 1814. 7. By Sir C. Eastlake. On the Belle  
 rophon. 8. Death Mask, from a secondary mask,  
 taken by Dr. Burton immediately after Napoleon's death. At  
 bottom right-hand corner are two signatures of the  
 Emperor: above, Buonaparte; below, Napoleon

# **NAPOLEON BONAPARTE: PORTRAITS AND DEATH MASK OF THE EMPEROR**



he embarked on the Franco-Prussian War (*q.v.*). He joined his army July 28, 1870, but five weeks later came Sedan, his surrender to the Prussians, Sept. 2, and the end of the empire. Napoleon was taken to Wilhelmshöhe, where he remained until the end of the war, when he joined the empress and their son at Chislehurst in England. There he died, Jan. 9, 1873, and was buried at Farnborough.

Napoleon failed principally because of contradictions in his outlook. He hankered after reviving the glories of France associated with the name which had brought him popularity, the undying Napoleonic legend. Yet being humane, cultured, and a dilettante, he wanted to rule in peace as the

arbiter of Europe, his dynasty accepted on equal terms by the oldest royalties. His only son, who was known as the Prince Imperial, is noticed under Eugène. *See also* Eugénie.

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## THE NAPOLEONIC CAMPAIGNS

*Supplementing the biography of Napoleon, this article gives an outline of the campaigns he directed. See also the articles on the various battles, e.g. Austerlitz; Friedland; Marengo; Waterloo; also Peninsular War*

Napoleon's first great campaign was in Italy in 1796. The W. and S. faces of the mountains of N. Italy marked the fronts of the opposing armies. On the W. face the armies neutralised each other, while the French army of Italy was extended along the mountains parallel to the coast between Nice and Genoa. In about an equality of numbers the allied Austrians and Sardinians held the passes. In one month Napoleon forced the Sardinians to a separate peace. He then pushed on against the Austrians and compelled them to make peace within the year, which left him conqueror of Italy. This great campaign was typical of his strategy: a well-thought-out plan, rapidly and ruthlessly carried out, his intentions veiled until the moment for execution, and then a swift and decisive blow.

On these lines 1798 saw his capture of Malta and his brilliant campaign in Egypt, but also the battle of the Nile, which cut him off from France. In 1799 he invaded Palestine, but was stopped at Acre by Sydney Smith. Sea-power defeated generalship, and, leaving his army behind him, he escaped to France.

Napoleon secretly collected an army in Switzerland, crossed the St. Bernard, and severed the Austrian communications. Melas, the Austrian commander-in-chief, on hearing of this blow, delayed for the surrender of Genoa, then fought at Marengo with his front towards Austria, was defeated, and surrendered with his whole army,

June 14, 1800, so that for the second time in five years Napoleon conquered Italy.

War broke out again in 1803 with Great Britain, whose government, by 1805, had built up a coalition with Russia and Austria. Napoleon had been ostensibly preparing to invade England, but he could never obtain the necessary uninterrupted command of the Channel. On Aug. 25, 1805, he decided to transfer the army to the Rhine, rapidly passed the Black Forest, and, before Mack in Ulm could be joined by the Russians, or realize his danger, he found himself surrounded, and capitulated with his whole army the day before Trafalgar. Napoleon followed up Ulm with the campaign of Austerlitz, where he defeated the Austrians and Russians on Dec. 2. The treaty of Pressburg, Jan. 1, 1806, forced Austria away from the second coalition.

Prussia had been hesitating whether to join the coalition, and, too late for success, on Oct. 1, 1806, she declared war. On Oct. 14 she was defeated at Jena and Auerstädt; on the 25th the French entered Berlin, and Prussia lay at Napoleon's feet. This might be considered the summit of his irresistible success. He had conquered Italy and Germany; Switzerland and Holland were in his hands; but England's sea-power set a limit to his European and Asiatic schemes of conquest. He had paralysed the older school of Austrian and German generals by his strategy and tactics.

The king of Prussia, though the greater half of his kingdom was in Napoleon's hands, did not sue for peace, and Sweden and Russia helped to carry on the struggle. The battle of Eylau, Feb. 7-8, 1807, has been claimed as a Napoleonic victory, but it was fiercely contested, and the French losses were equal to the Russian. At Friedland, June 14, Napoleon defeated Bennigsen.

### The Peninsular War

The Peninsular War, undoubtedly a beginning of his downfall, can only for a brief period be styled a Napoleonic campaign. In Nov., 1808, he defeated the Spanish insurgents in a decisive action, entered Madrid, Dec. 4, and then turned against Sir John Moore, who had ventured into the heart of Spain with 25,000 men. His retreat began in time to avoid Napoleon's overwhelming force, and the emperor, thinking the matter negligible, left the pursuit to Soult, Jan. 1, 1809, and turned his attention to Austria. Until Waterloo, Napoleon himself never met a British force, and never defeated one in a pitched battle.

The Austrians had been humiliated after Austerlitz, and awaited an opportunity for revenge. The archduke Charles took the field in April, 1809, and crossing the Inn between Braunau and Passau, got in between the French marshals, and had a great opportunity of crushing either wing, but the necessary rapidity of execution was still lacking in Austrian strategy. Napoleon took over the command on April 17 and defeated the archduke at Eckmühl on the 22nd. He pushed along the right bank of the Danube to Vienna, and then suffered his first real defeat at Aspern, or Essling, in an attempt to cross the Danube by the island of Lobau. Withdrawing to the island with heavy loss, he refused to retreat and, calling up every available man, badly defeated the Austrians at Wagram (July 5-6) and forced them to another peace.

From this campaign until 1812 Napoleon did not personally take the field. The Spanish War was left to his marshals, who were not equal to Wellington in generalship. But in 1812 he had decided on the conquest of Russia, and by the middle of June he had assembled on the banks of the Niemen an army of 363,000 men, of whom only one-third were French.

On June 24, he moved on Vilna, but the Russians fell back before him, and the grand army began its sufferings from heat and

**cholera.** Smolensk was taken with loss on Aug. 16-17. Napoleon hesitated as to postponing his victory till the next year, but his former sound judgements were becoming dimmed by his belief in his own infallibility, so he pushed on, and on Sept. 7 fought the sanguinary battle of the Borodino. It was not decisive, but the Russians left the road to Moscow clear, and Napoleon entered that city on Sept. 14, only to be welcomed by a three days' fire which laid the deserted city in ruins. He began the retreat on Oct. 19 with 115,000 men. Forced by pressure from the S., he was obliged to retreat by his line of advance, already denuded of supplies, and his army perished from hunger and cold. The crossing of the Beresina on Nov. 27-28 completed the disaster.

By supreme efforts Napoleon raised another army by March, 1813, and moved it to the Elbe. The Russians, now joined by the Prussians, had moved into Germany, the combined army being under Wittgenstein. Napoleon assumed command on April 25 at Erfurt, and as usual decided to attack. At Lützen, May 2, Wittgenstein began an attack on the French advanced guard, while he directed the bulk of his forces against Napoleon's right and rear. This turning movement was detected and repulsed by Napoleon.

At Bautzen, May 21-22, he again drove back Wittgenstein, but without conspicuous success; and immediately after concluded an armistice more to the Allied advantage than to his own. In the autumn campaign, he had to face a far stronger combination of Austrians and Swedes, in addition to the now reinforced Russians and Prussians. Undaunted, he would not fall back on France, but, making his headquarters at Dresden, where he defeated Schwarzenberg on Aug. 27, he decided to defend the line of the Elbe, undoubtedly a strategical mistake. His men were not fit to carry out his plans, and his plans were not so clear as they used to be; and in the "battle of the nations" at Leipzig, Oct. 15-18, he was defeated.

Wellington was bringing pressure from the S.; each conquered nation in turn, as it escaped from Napoleon's grasp, added its quota to his foes; and the fighting in Champagne in 1814 was the despairing effort of the lion at bay. In many ways it was one of his finest efforts. Schwarzenberg was advancing from Basel, and Blücher on the line of the Moselle, each

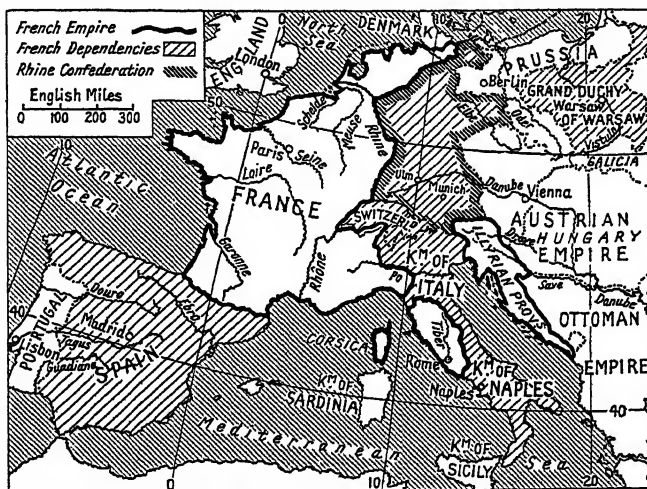
with an army superior in numbers to Napoleon's; while Bülow and Winzingerode were threatening from the N., Wellington from the Pyrenees, and Murat from Italy. Generally, Blücher's advance on Paris was along the Marne, while Schwarzenberg moved down the Seine, and Napoleon made superb use of these converging rivers.

Leaving his marshals to hold the crossings, he kept his main body between them, and came to the assistance of the side most immediately threatened. Thus he drove back Blücher from Brienne, Jan. 29, defeated him at La Ferté on the Marne, Feb. 11, and again at

Corsica, near Ajaccio, it has an orbicular structure which makes it, when cut and polished, a beautiful ornamental stone. From many points radiate concentric rings of dark and light coloured stone, the light consisting of feldspar and the dark of hornblende.

**Napo Pastaza.** Prov. of Ecuador, formed in 1925 by the division of Oriente (q.v.) region.

**Nappe.** In geology, a large recumbent fold of rock which has been driven more or less horizontally forward along a thrust plane. In the Alps such sheared recumbent folds occur one above another, and erosion has carved



Napoleonic Campaigns. Map showing the boundaries of the European states in 1812, as arranged by Napoleon

Vauxchamps, Feb. 14, and so stopped his direct line of advance on Paris, but Winzingerode was now at Soissons. Napoleon turned S. and drove Schwarzenberg, whose advance had reached Mormant, to the left bank of the Seine, Feb. 17, and towards Troyes. Napoleon then moved to meet Blücher on the Marne, and, driving him N. to Laon, defeated his left wing at Reims, March 13. Schwarzenberg, with Blücher, moved on Paris, which capitulated March 29.

In 1815 Napoleon had again raised a French army to defy Europe. With his usual rapidity, he defeated the unprepared Prussians at Ligny, June 16, but Ney failed to drive Wellington's advanced guard from Quatre Bras, and the obstinate Blücher, instead of retreating E. on Liège, moved N. to Wellington on the field of Waterloo.

**Napoleonite** or **Corstite.** In mineralogy, a variety of diorite. So called from its occurrence in

the valleys and peaks out of the pile so built up. See Fault; Fold.

**Naramsin.** King of Akkad, N. Babylonia. Neo-Babylonian tradition made him son and successor of Sargon I; Nabonidus's record that Naramsin's foundation inscription, unearthed at Sippara about 550 B.C., had been hidden for 3,200 years, would date his reign 3750 B.C. Some scholars consider this to be 1,000 years too early, and inscriptions prove that several other kings succeeded Sargon before Naramsin's reign. His victory stela from Susa is a supreme example of early Mesopotamian art. See Babylonia.

**Narasinha** or **Narsingh.** In Hindu mythology, one of the nine incarnations of Vishnu (q.v.). He appeared in the form of a man with the head and paws of a lion.

**Narayanganj.** Town of Pakistan, in the Dacca dist. of E. Bengal. It is a rly. terminus S.E. of Dacca on the Dhaleswari,

distributary of the Brahmaputra, and is a centre for the traffic in rice and jute. Pop. 56,000.

**Narbada** OR NERBUDDA. River of the N. Deccan, India. It rises near Mt. Amarkantak in the Maikal range, the E. end of the Satpura Mts., and flows almost due W. between the Satpuras and the Vindhya Mts. Its mouth is in the Gulf of Cambay, an inlet of the Arabian Sea. It is 800 m. long. Near Jubbulpore the river winds in a gorge between cliffs of white marble, the noted Marble Rocks.

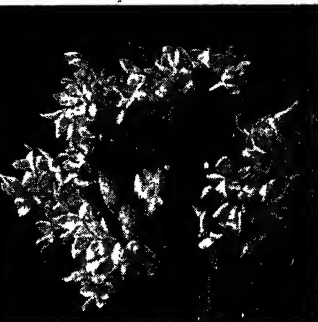
**Narberth.** Town of Pembroke-shire, Wales. About 19 m. S.W. of Carmarthen, and 9½ m. N.W. of Tenby, it has a rly. station. It has fragments of a 13th century castle dismantled by Parliamentarians after unsuccessful defence by Royalists in the Civil War. The parish church has a quasi-fortified tower. Pop. 1,046.



psychological condition in which an individual's love remains concentrated on himself.

**Narcissus.** Small genus of bulbous herbs of the family Amaryllidaceae. They are natives of Europe, N. Africa, N. and W. Asia. One species only, the daffodil (*N. pseudonarcissus*), is indigenous in Britain, though the jonquil (*N. biflorus*) and the pheasant's-eye (*N. poeticus*), escaped from gardens, have become naturalised here and there. The rush-like or strap-shaped leaves all spring directly from the bulb, and the flowers are borne on tall scapes, either singly, as in the daffodil, or forming an umbel, as in the polyanthus narcissus (*N. tazetta*). There are numerous garden variations and hybrids in existence.

For bedding purposes vast numbers of the bulbs in a resting state are imported from the bulb-



**Narcissus.** Left, flowers of pheasant's-eye, *N. poeticus*; right, polyanthus narcissus, *N. tazetta*

**Narbonne.** City of France. In the dept. of Aude, it is 93 m. E. of Toulouse, and is connected with the Mediterranean by a canal about 5 miles long. In Roman days it was known as Narbo, and was the metropolis of Southern Gaul. In the 12th cent. a commercial rival to Marscilles, it produces a well-known red wine and a famous honey, and has also salt, sulphur, and porcelain works. The Gothic church of S. Just, with a lofty choir, was formerly a cathedral. Narbonne, occupied by the Germans during the Second Great War, in Nov., 1942, was liberated by French troops on Aug. 31, 1944, in a spectacular advance from the Rhône. Pop. 29,975.

**Narcissus.** In Greek mythology, a beautiful youth, beloved of the nymph Echo, whose passion he could not return. Echo died of grief, and as a punishment the gods caused Narcissus to fall in love with his own reflection in a spring and pine to death. He has given his name to narcissism, a

farms of Holland; and great quantities of cut flowers are sent from the Scilly Isles. The bulbs should be planted as early as possible in the autumn, to allow of the full development of roots before winter. They are not particular as to soil, but will succeed best in a deep loam, especially if a layer of sand is placed beneath each bulb at the time of planting. See Amaryllidaceae; Corona.

**Narcolepsy** (Gr. *narkē*, numbness). Condition in which a patient suffers from "attacks" of sleep, though he is often wide awake at night. The cause is unknown, and there is no successful treatment.

**Narcotics** (Gr. *narkē*, numbness). Term used in more than one sense, but generally to describe drugs which produce analgesia or abolish pain. They include opium, morphia, and diamorphine (heroin). The action of a narcotic drug differs from that of an anaesthetic in that pain is relieved before sleep or unconsciousness occurs. See Anaesthesia; Drug; Hypnotic.

**Narcotine** (Gr. *narkē*, numbness). Alkaloid of opium. First prepared by Derosne of Paris, in 1803, it occurs in opium in an amount varying from one to ten p.c., and is obtained as a by-product in the manufacture of morphine. Narcotine has little narcotic action, and is not now used in medicine.

**Nardò.** City of Italy, in the prov. of Lecce, Apulia. Situated 11 m. by rly. W. of Zollino, a junction on the Gallipoli line, it has a cathedral and many churches. Its main industry is textiles. Near the city are olive plantations and vineyards. Pop. 14,000.

**Nardoo** (*Marsilea drummondii*). Aquatic flowerless herb of the family Marsileaceae. It is a native of Australia. One of the water-fern group, it has a creeping root-stock, and its fronds take the form of a long, erect stalk, with four leaflets at the summit, arranged crosswise, and sensitive to light. The spore capsules are of two kinds: one containing a single macrospore, the other numerous microspores. They are contained at first in hard shells known as sporocarps, which the aborigines pound into a kind of flour.

**Narenta** (Slav. *Neretva*). River of Yugoslavia. It rises near the border of Montenegro, flows N.W. nearly to Ostrožac, and then S. through the largest valley from the Dinaric Alps to the Adriatic Sea past Mostar. The valley provides a comparatively easy route from the Adriatic coast to Sarajevo. A rly. follows the valley to Konjic. Of the total course of 140 m. only 10 m. are navigable.

**Nares, OWEN RAMSAY** (1888-1943). British actor. Grandson of W. R. Beverley, scene painter, he

was born Aug. 11, 1888, at Maiden Erlegh, Berks, and educated at Reading. He first appeared on the professional stage at the Haymarket Theatre, London, in Her Father, 1908. Among his earlier parts were Karl in Old Heidelberg, the title-role in Peter Ibbetson, Gavin Dishart in The Little Minister, and the clergyman in Romance. A handsome appearance and polished style made him one of the most popular actors of his day, though it took him some years to establish his reputation as something more than a "matinée idol." Later plays included If Winter



**Owen Nares,**  
British actor

Comes, 1923; *The Fanatics*, 1927; *Call it a Day*, 1935; *Robert's Wife*, 1937; *Rebecca*, 1939. Nares acted in numerous films from 1913 onwards. He died at Brecon, after touring military camps, July 31, 1943.

**Narew.** River of N. Poland. It rises in the forest of Bielowiez, N. of Pruzhany, and after flowing W. and S.W. across the plains for some 200 m., joins the Bug at Serock, 18 m. N. of Warsaw. The combined streams then run W. 20 m. to join the Vistula at Nowy Dwor. When the Germans launched their offensive against the Russians in the First Great War in July, 1915, the Narew formed the main line of defences screening Warsaw against Hindenburg's advance. After prolonged and bitter fighting, the Germans crossed on Aug. 15, but Warsaw had fallen already. After the German invasion of Poland in 1939, the Polish army was forced back to a line formed by the Narew, Vistula, and San, and the German advance was temporarily held by the fortress of Modlin. German troops forced a crossing of the Narew N.E. of Warsaw, which fell on Sept. 27. The Narew was again the scene of heavy fighting when it was crossed by the Russians in the autumn of 1944. Poland's 1945 frontier left its upper reaches in Russia.

**Nariño.** Maritime dept. of S. Colombia, S. America. It is bounded N. by Cauca dept. and S. by Ecuador. Although traversed by the Andes, it has many fertile tracts, yielding sugar, cocoa, rice, potatoes, and cereals. Stock raising is a prominent industry, and gold is mined. Manufactures include Panama hats and footwear. Over 500 m. of rly. serve the dept., which has many good roads. The capital is Pasto (*q.v.*). Area, 11,553 sq. m. Pop. 465,868.

**Nariño, ANTONIO** (1765-1823). Colombian statesman. He was born at Santa Fé, and as a young man incurred the displeasure of the authorities by translating into Spanish the decree of the French assembly concerning the rights of man and citizenship. After spending some time in Europe, he returned to Colombia and took part in the rising against Spain. For a short time in 1811, and again in 1812, he was dictator. In an ensuing civil war he was defeated and sent in 1814 to Spain, where he remained in prison until 1820. He died at Leiva, Dec. 13, 1823.

**Narni.** City of Italy, in the prov. of Terni. It stands on the Nera, the ancient Nar, 66 m. by

rly. N. of Rome. Picturesquely situated on a rocky eminence, 1,000 ft. alt., with an ancient



Narni, Italy. Piazza Priora, with the 11th century cathedral on the left; right, facade of the 14th century town hall

castle, now used as a prison, it has a cathedral dating from the 11th century. There are mineral springs in the vicinity. A trade is carried on in chemicals and indiarubber goods. Roman remains include a remarkable bridge built by Augustus, and an aqueduct that brought water from a spring 15 m. distant. A medieval bridge was destroyed by the Germans in the Second Great War, in which Narni fell to the British on June 13, 1944. The ancient Nequinum, or Narnia, it has been a bishop's see from 369. Pop. 14,000.

**Naroch.** Lake of White Russia S.S.R. It is 80 m. S.S.E. of Daugavpils, Latvia, and is drained by the river Naroch. In the First Great War the ground between lakes Naroch and Vishniev was the scene of heavy fighting in March and April, 1916. After early German successes, Russian reserves made a flank attack, causing a general withdrawal by the enemy. The territory was seized by the Poles from the Bolsheviks in 1921, and incorporated in the U.S.S.R. after the Second Great War.

**Narragansett Bay.** Inlet on the S.E. coast of Rhode Island, U.S.A. It extends inland to the mouth of Providence river, a distance of 25 m., and is from 4 m. to 8 m. broad. It contains several islands, among them Conanicut, which forms the lower portion into two channels, Prudence Island, and Rhode Island, which separates it from Sakonnet river.

Providence stands at its head, Newport on its E. shores, and Narragansett Pier, a fashionable seaside resort, below its entrance on the opposite side to Newport.

**Narrows, THE.** Name given to the narrowest portion of the Dardanelles Strait. It is less than a mile wide between Kilid Bahr and Chanak. See Dardanelles, Attacks on the.

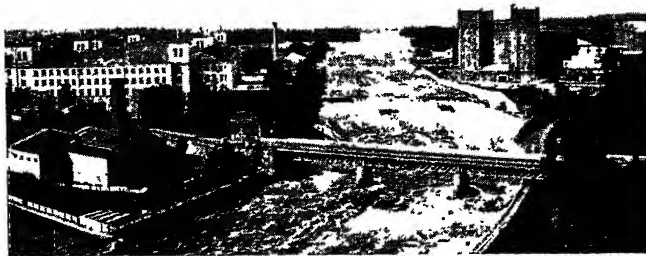
**Narses** (c. 474-568). General and administrator under the Roman emperor Justinian. A Persian eunuch, he rose to high position at court, and for some time shared the command in Italy with Belisarius. His own military triumphs included a series of victories over the Goths, Alamanni, and Franks, as a result of which Italy was recovered as a province of the empire, governed by Narses himself from Ravenna. His administration, however, was harsh, and in consequence of a deputation, sent to Justinian to complain, Narses was recalled. In revenge he intrigued with the Lombards. See Byzantine Empire.

**Narsinghgarh.** Indian town and former state, until 1947 in the Central Agency, now part of Rajasthan. The state, founded in 1681, occupied part of the N. slopes of the Vindhya Mts., with an area of 731 sq. m. Pop. 125,178. The town lies 20 m. N.W. of Bhopal. Pop. 11,036.

**Narsinghpur.** A former Indian state now merged in Orissa. Founded 1292, and established by treaty in 1803, it is situated N. of the Mahanadi and S. of the eastern detached portion of Angul; it was one of the Orissa feudatory states. The raja resided at the village of Narsinghpur. Area, 199 sq. m. Pop. state, 50,000.

**Narthex.** In early Christian architecture, the vestibule or porch of a basilica. It is within the main entrance at the opposite end to the altar and sanctuary. It was originally used to accommodate Christian converts who had not passed the stage of initiation. The term has been extended to all church vestibules, but the traditional type of narthex is a room as long as the width of nave and aisles combined, with doors leading into the latter, and others to the atrium or outer court. See Basilica; Cathedral.

**Narva.** Town of Estonia S.S.R. It is 75 m. W. of Leningrad, and stands on the Narva, 7 m. from its mouth in the gulf of Finland. It is connected with Leningrad by rly. The buildings include the



Narva, Estonia S.S.R. View of the cotton mills, a main industry, on the bank of the River Narva

cathedral, the town hall, and the arsenal. The industries are tanning, flax, cloth and cotton mills, and the making of rope. The fishing is important. Founded in the 13th century, Narva was the property of Denmark and the Teutonic Order before passing to Sweden. The Swedes improved its fortifications, and in 1700 it was besieged, in vain, by the Russians. In 1704, however, Peter the Great captured it, and it was part of Russia until the state of Estonia was formed after the First Great War. The Russians erected a fortress called Ivangorod, on the other side of the river, but it fell into disuse. Pop. 25,000.

The battle of Narva was fought between the Russians and the Swedes, Nov. 30, 1700. The Russians were besieging the fortress, then in the possession of the Swedes, when Charles XII advanced to its relief. Peter the Great himself did not await his formidable foe, but fled to Novgorod. The Swedes, 8,000 strong, attacked the Russians behind their entrenchments, in a snowstorm, and in an hour had broken their left wing. Charles gained a decisive victory.

During the Second Great War, Narva was occupied by German troops in August, 1941, and captured by the Russians July 26, 1944.

**Narvik.** Seaport of Norway. It stands 75 m. from the sea on the almost land-locked Ofot fjord, a branch of the narrowing Westfjord. Above and below the port are the small but deep Rombaks and Herjangs fjords. The terminus of the rly. to Gellivare (g.v.) and Lulea (g.v.) in Sweden, and situated 30 m. N.N.E. of Pernitz, it has extensive quays and exports Swedish iron ore. Pop. 10,000.

**NARVIK IN THE SECOND GREAT WAR.** Narvik was essential to German war potential as the port for the iron ore of the Gellivara

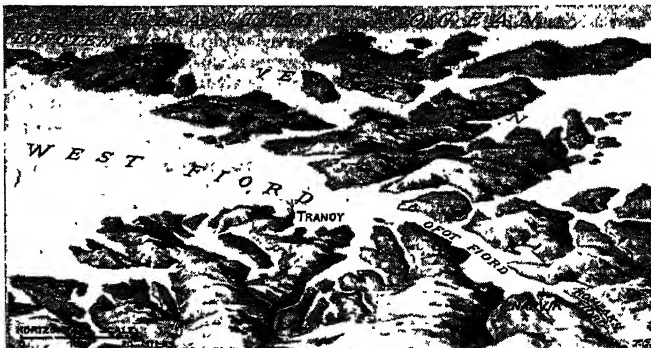
and Kiruna mines. Sailing along a narrow corridor inside Norwegian territorial waters, the ore ships were virtually outside the British blockade. It was the German determination to ensure iron supplies from Narvik, and the British decision to terminate them, that precipitated Norway into the war.

On April 8, 1940, the Royal Navy laid minefields at the entrance to the West fjord and in the corridor used by the ore ships with the object of forcing them outside territorial waters. Next day Germany invaded Norway. In preparation for that event a 10,000-ton ship, the Norge, ostensibly a whale-oil tanker but actually a camouflaged German troopship, had put into Narvik two days earlier accompanied by several merchantmen. After some desultory fighting with the Norwegian garrison, the troops from the ships seized Narvik. Later in the day they were reinforced by a convoy of supply ships and transports escorted by six destroyers and a submarine. The passage of this convoy was opposed by two Norwegian coast-defence ships, both destroyed before they could seriously damage the enemy.

On the afternoon of April 9 the 2nd British destroyer flotilla, which, after covering the previous day's mine-laying, was on patrol at the entrance to West fjord, was ordered by the Admiralty to attack the enemy force in control of Narvik. The flotilla consisted of the Hardy, Hotspur, Hostile, Havoc, and Hunter, each mounting four 4.7-in. guns, and was commanded by Capt. Warburton-Lee. As the enemy vessels were all more heavily armed than the British and supported by newly-installed German shore batteries, Warburton-Lee signalled the Admiralty the superior German strength, but added that he intended to attack at dawn on April 10. The Admiralty placed on him the onus of deciding to attack or not.

At 4.30 a.m. on April 10, after a hazardous passage of the 60 m. long West fjord in a blinding snowstorm, the British flotilla stood outside Narvik, and the Hardy entered the harbour and opened fire with guns and torpedoes against the German transports and destroyers there. The rest of the British destroyers followed and a desperate action ensued. The Hardy was repeatedly hit by ship and shore batteries, and her commander was killed. Finally, a shell put her engines out of action and she was run aground. When the Hunter had also been sunk, and the Hotspur and the Hostile seriously damaged, the remaining destroyers withdrew. The enemy was in no condition to follow, having lost one destroyer sunk and three on fire, besides six supply ships sunk. Warburton-Lee received a posthumous V.C.

The surviving British ships then blockaded the port until April 13, when they were joined by the battleship Warspite and the des-



Narvik, Norway. Sketch map showing the sea approach to Narvik, scene of an historic twofold British naval action in the Second Great War



troysers Cossack, Eskimo, Punjabi, Bedouin, Foxhound, Forester, Kimberley, Icarus, and Hero. Supported by squadrons of the fleet air arm, the British force silenced the shore batteries, and after a four-hour battle sank the German destroyers in Narvik harbour. Naval parties then went ashore.

Although the Germans' seaward defences at Narvik had been destroyed, it was impossible for the Allies to hold the port unless they could advance from the land, as the surrounding districts were already in the hands of strongly entrenched enemy forces. The capture and occupation of Narvik depended, therefore, on the advance of the Allied military forces from Namsos, nearly 400 m. to the S. When the Allies were obliged to re-embark at Namsos, certain formations delayed by bad weather and impassable roads had reached the vicinity of Narvik, and on May 26 assembled on the N. shore of Rombaks fjord preparatory to an assault on Narvik.

Under covering fire from British warships, French and Polish troops crossed and established bridgeheads, whence Norwegian troops attacked the Germans entrenched on the mountains to the E., from where the town was to be forced. After heavy fighting, the enemy was cleared from his positions, but the advance was delayed by a devastating German air raid which laid much of the town in ruins.

At midnight on May 26 the Allies attacked the town and captured it after heavy losses. The fall of Narvik and the subsequent Allied advance along the rly. to the Swedish frontier promised to be a turning point in the Norwegian campaign; but the deterioration of the Allied situation in France and Flanders made imperative the withdrawal of the Allied forces from Narvik, which was evacuated on June 10 after the harbour installations had been destroyed. The evacuation of the port ended all organized resistance in Norway. *See* Norway; Second Great War. *Consult* The Invasion of Norway, H. Lehmkuhl, 1940.

**Narwhal** (*Monodon monoceros*). Cetacean belonging to the porpoise group. It inhabits the Arctic Ocean, and is distinguished by the spirally grooved, tapering tusk of the male, often over 7 ft. long, the animal itself being from 12 ft. to 15 ft. in length. The tusk usually

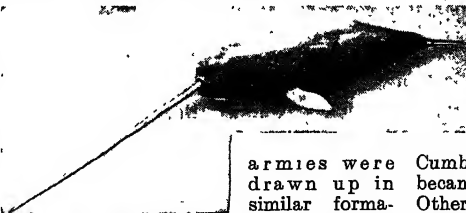
grows from the left upper jaw, and its fellow on the other side is rudimentary and does not protrude from the jaw, though specimens have been found with two long tusks. In other respects the narwhal has the general form of a small whale. Found in small schools of from 10 to 20 individuals, it is believed to feed upon cuttles, crustaceans, and small fish. Its oil and the fine ivory obtained from the tusk are valuable. *See* Whale.

**Nasal Index.** Number indicating the percentage ratio of the breadth to the length of the human nose. On the skull, the breadth is measured across the anterior orifice, the length measured from the junction of the nasal and frontal bones; on the living subject, the breadth is taken across the wings, the length from the root to the junction with the lips. Narrow noses, i.e. with nasal index below 47 (skull) or 70 (living subject), form the Leptorrhine group, including most Europeans, many N. Africans, and Rajputs. Medium noses, Mesorrhine group, 47-51 (70-85), are characteristic of American Indians and many Asiatics. Broad noses, Chamaerhine or Platyrrhine group, over 51 (85), characterise Africans S. of the Sahara, Melanesians, Negritos, and Negrells, Australian aborigines, etc. *See* Cephalic Index; Craniometry; Facial Angle; Man.

**Naseby, BATTLE OF.** Fought June 14, 1645, during the English Civil War. The king's cause was losing ground, and his army of 7,500 men was being followed by 13,000 parliamentarians under Fairfax and Cromwell from Davenry towards Leicester. At Broadmoor, just before entering Leicestershire, Charles decided to fight. His foes fell back and took up a position on some high ground just N. of Naseby, a village 7 m. from Market Harborough. Both

put to flight the opposing horsemen, whom they recklessly pursued towards Naseby. While the royalist infantry pushed the enemy back, the day was turned by Cromwell's troopers, who, after routing the horse opposed to them, fell upon the flank of the infantry. These were thrown into confusion, and the king, who was with the reserve, gave them the word to charge. But the earl of Carnwath, realizing the situation, seized the bridle of his horse and turned it from the field, the attendant troops quickly following this example. The parliamentary foot rallied, and, with Cromwell's horse, soon completed the victory. Rupert, returning from his pursuit, could do naught but follow Charles to Leicester. The royalists lost about 1,000 killed and 5,000 prisoners, and the king's private papers were also seized and afterwards published. *See* Charles I; Civil War, The.

**Nash, JOHN** (1752-1835). British architect. Born of Welsh stock, he was apprenticed to Sir Robert Taylor, and after abandoning architectural work retired to an estate near Carmarthen, but resumed his practice about 1793. By 1814 he had become favourite architect of the prince regent. It is with his share in London architectural improvements that his name is inseparably connected. He designed terraces along the edge of Regent's Park, adopting the design (previously evolved by the Adam brothers) of uniting several houses in a single façade, faced with stucco. Park Crescent and square, with Albany St. and other adjoining streets were also erected from his designs. After projecting the Regent's Canal, he designed Regent St., and All Souls' Church, Langham Place. Other London buildings included the Haymarket Theatre, Suffolk Galleries, United Services Club, E. wing of Carlton House Terrace, and the repairing and enlarging of Buckingham House (later Buckingham Palace), including the entrance archway which, removed in 1850-51 to



Narwhal. Male specimen with long, tapering tusk

armies were drawn up in similar formation, the foot in the centre, with cavalry on both flanks and a reserve behind.

The royalists opened the fight by crossing the intervening valley and charging up the hill. On one wing, with Rupert leading, they

Cumberland Gate, Hyde Park, became known as Marble Arch. Other important work consisted of alterations and additions to the Pavilion, Brighton. He retired about 1831 and died at E. Cowes Castle, Isle of Wight May 13, 1835. A study by J. Summerson appeared in 1935. *See* Architecture illus. p. 571 (No. 7); Marble Arch illus.; Regent Street.

**Nash, JOHN NORTHCOTE** (b. 1893). British painter. Younger brother of Paul Nash (*v.i.*), he was born in London, April 11, 1893, and educated at Wellington. In 1918 he was commissioned by the Imperial War Museum to paint war pictures. His early work was influenced by Cubism, but he later developed a naturalistic style, and became well known for landscapes and woodcuts. A member of the London Group (*q.v.*), he became assistant teacher of design at the R.C.A. in 1934. He is represented at the Tate gallery, the Victoria and Albert Museum, London, and provincial galleries.

**Nash, PAUL** (1889-1946). A British painter. He was born in London, May 11, 1889, and studied at the Slade School. His early work showed the influence of Blake and Rossetti in its visionary character, but about 1911 he exhibited small drawings of

gardens, trees, and ponds. During the First Great War he came into prominence with a collection of drawings and paintings of the Ypres salient, the most representative being *The Menin Road*, now in the Imperial War Museum. In the Second Great War he exhibited remarkable studies of smashed aircraft. Professor of design at the

R.C.A., 1924-25, he is represented at the British Museum, Tate gallery, Manchester art gallery, and Musée de la Guerre, Paris. His later work was notable for a meta-physical or apocalyptic quality owing something to the influence of Blake, but based on forms observed in natural history, *e.g.* shells, flints, fungi, in austere colour. He regularly exhibited with the London Group. He died July 11, 1946. His autobiography, *Outline*, was published in 1949.

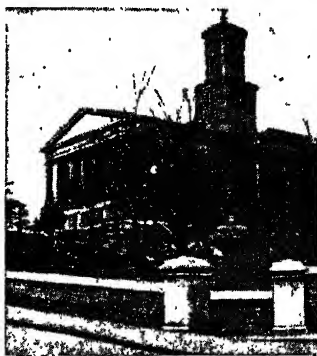
**Nash, RICHARD** (1674-1762). English dandy known as Beau Nash. Born at Swansea, Oct. 18, 1674, the son of a successful glassmaker, he was educated at Carmarthen Grammar School and Jesus College, Oxford. He was for a brief time in the army, and then entered the Inner Temple, 1693. He, however, took to gambling and living by his wits. In 1705 he went to Bath, then beginning to be a fashionable resort, and set about organizing its attractions, coming to be regarded as the arbiter of affairs and titular master of the ceremonies. He died Feb. 3, 1762, and was buried in Bath Abbey. See *Life of Richard Nash*. O. Goldsmith, 1762.

**Nashe or NASH, THOMAS** (1567-1601). English satirist, playwright and critic. Born at Lowestoft, he was educated at St. John's College, Cambridge, graduating in 1586. After travel in France and Italy, he became a prominent figure in literary London, a friend of Greene, Lodge, Marlowe, and others. He took the anti-Puritan side in the Martin Marprelate controversy, engaged in a paper war with Gabriel Harvey (*cf.* his *Have with you to Saffron Walden*, 1596), completed Marlowe's *Tragedy of Dido*, 1594, and was imprisoned for several months in the Fleet on account of his suppressed comedy, *The Isle of Dogs*, 1597. His novelette, *The Unfortunate Traveller*, or

*The Life of Jacke Wilton*, 1594, started the Surrey and Geraldine legend, and forms a link between the picaresque fiction of Spain and the novels of Defoe and Smollett. His works have been edited by R. B. McKerrow, 4 vols., 1904-10.

**Nashua**. City of New Hampshire, U.S.A., one of the county seats of Hillsboro co., and the state's largest city. It stands on the Merrimac at its confluence with the Nashua, 15 m. S. of Manchester, and about 40 m. N.W. of Boston, and is served by the Boston and Maine rly. and an airport. Its varied industries include cotton goods, textiles, blankets, shoes, iron and steel products, hardware, asbestos, and paper products. Among the city's pioneer factories was one founded by the inventors of the first instruments for shearing and clipping animals and of barbers' clippers. One quarter of Nashua was destroyed by fire in 1930. Settled in 1655 it was incorporated as Dunstable in 1673, and received its present name in 1836, becoming a city in 1853. Pop. 32,927.

**Nashville**. Second largest city of Tennessee, U.S.A., the state capital, and the co. seat of David-



Nashville, Tennessee. The state capitol, built on a hill overlooking the town

son co. A port of entry, it stands on both banks of the Cumberland river, 185 m. S. by W. of Louisville, and is served by the Louisville and Nashville and other rlys., and by steamers, and an airport. It is in the midst of fertile country, producing cotton, tobacco, wheat and other grains, fruit, and livestock. Nashville itself is a leading commercial and industrial centre. A well-built city, its prominent buildings include the capitol, the Federal building, the city hall, and the court house. In the grounds of the capitol is the tomb of James Polk, 7th U.S. president.



Paul Nash. *The Pond*, an oil painting (1921-24) expressive of the artist's great interest in the decorative quality of trees

By courtesy of the Earl of Cranbrook

Here also is a national cemetery and a confederate cemetery; a R.C. cathedral; an art museum; the state library and historical museum; Vanderbilt university, and Fisk university for negroes. Settled in 1780 and formerly known as Nashboro, the city was incorporated under its present name in 1784, and became a city in 1806. In 1864 it was the scene of a fierce battle between the Tennessee army and the Federal forces. A national parkway (447 m.), following the old Indian trail between Nashville and Natchez, Miss., was under construction in 1948. About 10 m. E of Nashville is the Hermitage, the home of Andrew Jackson, a national shrine. Pop. 167,402 (one third negro).

**Nashville, BATTLE OF.** Federal victory in the American Civil War, Dec. 15-16, 1864. J. B. Hood, in command of the army of Tennessee 25,000 strong, was moving W. from Atlanta when he learned that a Federal army of some 55,000, under G. H. Thomas, was holding Nashville. Hood invested the town until, on Dec 15, Thomas opened the battle by a general attack. The day slightly favoured the Confederates. An attack on the Confederate right in the morning failed, but MacArthur, commanding the 16th Federal corps, pierced the Confederate left at the moment when Federal cavalry attacked them in the rear. The rout was complete, and Hood made his way across the Tennessee river with what was left of his army. Federal losses were 3,000; the Confederates lost 4,500 in prisoners, in addition to heavy casualties.

**Nasik.** District and town of Bombay state, India, in the Central division. The dist. lies N.E. from Bombay, E. of the W. Ghats. The rainfall is 29 ins. annually; two-thirds of the area is cultivable, but only 54 p.c. is cultivated. Native food grains and pulses are the chief crops.

The town is near the source of the Godavari river at the foot of the W. Ghats, and is consequently a sacred place of pilgrimage; temples and shrines line the river banks and dot the bed of the stream. Nasik is a great road centre on the rly. from Bombay to Delhi. It is famous for its brass and copper work, and cotton handloom weaving. Area, 5,922 sq. m. Pop. dist., 1,113,901; town, 42,756.

**Nasirabad.** Town of Bombay state, India, in the dist. of Kandesh East. On the rly. 2 m. S. of Bhadli, it manufactures glass bangles. Pop. 14,392.

**Nasmyth, ALEXANDER** (1758-1840). Scottish painter. Born at Edinburgh, Sept. 9, 1758, he



Alexander Nasmyth,  
Scottish painter  
After Nicholson

studied under Allan Ramsay in London, and in Italy. Settling at Edinburgh, he tried portrait painting, but abandoned it for landscape. He was a member of the Society of Scottish Artists, an associate of the Royal Institution, and occasionally exhibited at the R.A., London. He died April 10, 1840.

**Nasmyth, JAMES** (1808-90). British engineer. Born at Edinburgh, Aug. 19, 1808, he was educated at the High School, and soon became an adept in making models of steam and other engines. In 1834 he opened a foundry in Manchester, and, in partnership with H. Gaskell, worked up a prosperous business. In 1842 he patented the steam hammer by which his name is best known. His claim to this was disputed, as the French manufacturer Schneider had copied the design from Nasmyth's note-book and built one at his Creusot works before Nasmyth erected his in England. He invented various tools and mechanical appliances, and constructed a telescope to assist his astronomical studies. His observations were recorded in *The Moon considered as a Planet, a World, and a Satellite*, 1874, illustrated with photographs. He died May 7, 1890.

**Nasmyth, PATRICK OR PETER** (1787-1831). A British painter. Born at Edinburgh, he settled in



Patrick Nasmyth,  
British painter

London in 1807. On account of his imitation of the Dutch school, he was acclaimed as the Scottish Hobbema. He exhibited at the R.A. from 1809, and was an original member of the Society of British Artists. He died in Lambeth, Aug. 17, 1831.

**Nasr-ed-Din** (1829-96). Shah of Persia. He was born April 4, 1829, and succeeded to the throne, 1848.

He reached friendly relations with France and Russia; but his attempt to annex Herat (q.v.) brought him into conflict with Britain, 1856-57. A



Nasr-ed-Din,  
Shah of Persia

man of enlightenment and culture, his visits to Europe, 1873, 1878, and 1889, strengthened his endeavours to introduce reforms into Persia. Religious toleration, the telegraph, banking organization, and a post office were established, despite opposition. He was assassinated by a religious fanatic, May 1, 1896.

**Nassarawa.** Town of North Nigeria. It is situated on the Benue and is a centre of rubber and cotton production. The Fula tribe, who occupied the neighbourhood, surrendered to the British in 1902.

**Nassau.** An area of Germany once in the Prussian prov. of Hesse-Nassau. From it the family of Orange-Nassau took the title of count and duke. It was an independent state until 1866. Nassau lies between the Main and the Rhine, with the Lahn flowing through it. Its area is about 1,800 sq. m., and it had in 1866 nearly 500,000 inhabitants. It takes its name from the little town of Nassau on the Lahn, where the ruling family built their castle, but Wiesbaden was the capital.

The family of Nassau dates from about 1200. To a younger branch belonged William the Silent, and other princes of the house of Orange-Nassau. This became extinct when William III died in 1702, and its lands passed to a branch still in Nassau. This lost all its lands in 1806, but in 1815 its head, William, was made king of the Netherlands and grand duke of Luxemburg. His family, extinct in the male line in 1890, was represented in the female line by Wilhelmina, queen of the Netherlands.

The other branch of the family, having produced a German king in Adolf of Nassau (d. 1298), was divided into several lines. Two of these were made princes of the empire, and in 1806 Napoleon made them dukes. In 1816, having been granted the lands taken from the other branch of the family in 1806, Frederick William, as the



Nassau, New Providence. Courtyard of Government buildings in the capital of the Bahama Islands

result of a succession of deaths, became the sole ruler of Nassau. He called himself duke of Nassau, joined the German Confederation, and gave a constitution to his people. In 1866 the duke joined Austria in fighting against Prussia; consequently he lost his duchy. In 1890 the head of this family became grand duke of Luxemburg. See Netherlands; Orange.

**Nassau.** City, seaport, and chief town of New Providence (q.v.), and capital of the Bahama Islands, B.W.I. It stands on a declivity of the N.E. coast, has a sheltered harbour, wherein vessels drawing 16 ft. of water may anchor, and is defended by forts. Prominent buildings include government house, a cathedral, and other churches. It is a winter resort for invalids. It exports much local produce, including sponges, cotton, fruits, and salt. Founded by the English in 1629, it was almost destroyed by the Spaniards and French in 1703, but rebuilt in 1718, and fortified in 1740. In the American Civil War it was the headquarters of the blockade runners. Pop. 12,975.

**Nast, Thomas** (1840-1902). German-born American caricaturist. Born at Landau, Bavaria, Sept. 27, 1840, he was taken in 1846 to America. After drawing for Harper's Weekly and other journals, he went through the Garibaldi campaign in Italy, 1860-62, and the American Civil War. As a caricaturist, he proved a subtle and dangerous opponent of Tammany Hall. The Fight at Dame Europa's School, 1871, and the New York edition of the Pickwick Papers, 1873, were illustrated by him. He became American consul at Guayaquil in Ecuador, where he died, Dec. 7, 1902.

**Nasturtium.** Botanically, a genus of hardy cruciferous plants. Common garden nasturtiums are Indian cress (*Tropaeolum majus*), and canary creeper (*T. peregrinum*). See Indian Cress; Tropaeolum; Watercress.

**Natal.** One of the four provinces of the Union of South Africa. It has an area of 35,284 sq. m. (including Zululand, 10,427 sq. m.), and a pop. of 2,182,733, of whom 232,923 are European. The great majority of the white pop. is of British

extraction, but there are a number of Dutch and some German settlers. Of the various religious denominations the Anglican church has the most adherents, but the Dutch Reformed church, Presbyterians, and Methodists are also strong. Most of the 200,000 Indians in S. Africa live in Natal, almost entirely in the towns. Zululand, annexed in 1897, includes Tongaland; the districts of Vryheid, Utrecht, and part of Wakkerstroom, which are included in the so-called northern districts,

were transferred to Natal from the Transvaal in 1903. Pietermaritzburg is the seat of the provincial government, but Durban is the largest town, followed by Ladysmith, Dundee, Newcastle, Vryheid, and Greytown.

Natal lies in the extreme S.E. of Africa, and is bounded by the Cape Province and Basutoland on the S.W. and W.; by the Transvaal and Portuguese territory on the N.E. and N.; by the Orange Free State on the N.W., and by the Indian Ocean on the S.E. It has a seaboard of about 375 m., almost wholly without indentation. Of this, 165 m. belong to Natal proper, and the rest to Zululand. Its greatest length is about 250 m., and its greatest breadth about 200.

The province generally is mountainous, and near its border are some of the highest peaks of the Drakensberg range.



Natal arms



Natal. Map of the South African province covering an area of 35,284 sq. m., and showing the principal products and industries.

The ground rises rapidly from the coast in a succession of hills and ridges, between which are valleys in which the climate is tropical. The temperature falls as the higher parts of the country are reached, but everywhere it is warm. Malaria is found on the coast, but the province is practically free from consumption.

The highest mountains in Natal are Mont aux Sources (11,000 ft.), and other peaks of the Drakensberg range, many over 10,000 ft. high. The Biggarsberg is a spur of the Drakensberg. The chief river is the Tugela, which flows across the province from its source in the Drakensberg. Its main tributary is the Buffalo, which comes from another section of the Drakensberg, others being the Klip and the Mooi. Other rivers are the Umkomanzi, or gatherer of waters, a stream that, owing to its winding course, is 200 m. long, Umzimkulu with its tributary, the Ingangwana, and the Umgeni with its wonderful falls. The Pongola is a frontier river, which divides Natal from the Transvaal.

#### Natal and the Union

Natal is governed, as far as its internal affairs go, by a representative assembly and a small ministry responsible to it, on the accepted British model, except that its head, the administrator, is appointed by the Union government. This ministry looks after education, hospitals, etc., but most other matters are controlled by the Union authorities. It has a revenue from certain specified sources, and subsidies granted by the Union parliament. The franchise is practically confined to whites. In the house of assembly of the Union the province is represented by 17 members, while it sends eight to the Senate. The law is administered by magistrates in local courts and by judges on circuit. The highest court of the province sits at Pietermaritzburg, and from it there is a right of appeal to the supreme court of the Union at Bloemfontein.

The soil of the province is not very fertile and only about 12,000,000 acres are available for agricultural purposes. Coal is the most important mineral. Iron exists in large quantities, and in close proximity to the coal, while gold and other minerals are found. There are marble quarries near the mouth of the Umzimkulu. In Zululand gold reefs have been discovered, and there other minerals, including coal, exist. Timber is abundant, much being cut for

industrial purposes, and various kinds of tropical fruits abound in the warm regions near the coast, where also tea, sugar, coffee, and cotton are grown.

Many of the settlers devote their energies to the rearing of horses and cattle, although the rinderpest has proved a great drawback in this connexion. There are a large number of sheep and goats, many of these being owned by the natives, while ostriches, pigs, and poultry are bred. Of wild animals the larger ones, elephant, buffalo, and giraffe, have disappeared, and the lion and rhinoceros are found in only one area. Antelopes are still fairly plentiful, and there are some leopards and panthers. Birds and snakes abound.

The entrance to the province is at Durban, where steamers of the Union-Castle and other lines call regularly. From there the main line of rly. strikes across the country, passing by Pietermaritzburg, Ladysmith, and Newcastle, and after cutting the Drakensberg, enters the Transvaal. Two lines branch off from Durban along the coast, one to the N. and the other to the S., while two others go from Pietermaritzburg.

The country was discovered by Vasco da Gama on Christmas Day, 1497, and was therefore named Natal or Terra Natalis. Various mariners, both English and Dutch, put in here during the next three centuries, but the few attempts to make settlements were not successful. The native tribes were left almost to themselves until 1835, when one of the kings made a grant of land to the British and a colony was formed at Durban. The authorities in London, however, declined to proclaim the district a British colony.

#### Boers and British

In 1837 the first Boer settlers, coming through the Drakensberg, entered Natal. Almost at once they were attacked by the Zulus, and a struggle, in which some Britons took the side of the Boers, began. Finally, Dec. 16, 1838, after the British had been obliged to evacuate Durban, a large Zulu force was destroyed on the Umslato river, and the Boers secured possession of the country, entering Durban and founding Pietermaritzburg. They declared themselves a republic, but as they were technically British subjects, having come from Cape Colony, the British refused to admit independence. There was some fighting, but in 1843 Natal submitted and became a British colony.

In 1844 the country was added to the Cape of Good Hope, but in 1856 it was made a separate colony. In 1879 the Zulu war was fought out in the colony, and in the Boer war of 1900-2 some hard fighting took place on its borders. In 1893 it was granted responsible government, and in 1910 it joined the new Union of South Africa.

With the virtual closing of the Mediterranean and the loss of Singapore in the Second Great War, Durban became of first importance as a naval base, and formed a vital link in British and American communications with the Middle East. Natal units serving against the Axis forces included the Royal Natal Carabineers, the Natal Mounted Infantry, the Royal Durban Light Infantry, and units of the South African air force. See Abyssinia; N. Africa Campaign; S. Africa, Union of; Zululand.

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**Natal.** Seaport of Brazil, and capital of the state of Rio Grande do Norte. It is the main airport for trans-Atlantic traffic from Europe to S. America. Situated on the Rio Grande near its mouth, 138 m. N. of Pernambuco, with which it is connected by rly., its harbour, formed by the estuary, is occasionally obstructed by sandbanks, which are dredged to admit vessels of 22 ft. draught. Cotton, sugar, leather, rubber, wax, and timber are exported. It was formerly known as Cidade dos Reis. Pop. est. 41,000.

**Natchez.** North American Indian tribe of Moskogan stock. In the 17th century they occupied nine villages in Mississippi. Their complex sun-worship, head-flattening, use of mounds as foundations of dwellings and temples, advanced pottery, and skilful weaving of mulberry-bark cloth perpetuated the culture of the mound-builders.

Early in the 18th century the Natchez and their allies entered upon a war with the French settlers, who had built a fort on their soil. In 1729 this fort was destroyed by the Indians, who killed the men and took the women and children prisoners. In return the French drove the tribe across the Mississippi into Louisiana



and partly destroyed them in Jan., 1731. The prisoners were sold as slaves to the W. Indian planters, and the remnant, after further fighting, joined other tribes. The few existing Natchez are found chiefly with the Cherokees. The name is perpetuated, not only in the city, but in Natchez Trace, a road constructed in 1801-02 from Nashville across the state of Mississippi to Natchez, about 500 m. away and under reconstruction as a national highway in 1948. See American Indians; Cherokee.

**Natchez.** City and seaport of Mississippi, U.S.A., the co. seat of Adams co. On the Mississippi river, 90 m. S.W. of Jackson, its commerce is riverborne; it is the only considerable U.S. town with no rly. service. A bridge linking it with Vidalia was opened 1940. There is a memorial park, and near the city a national cemetery. Industries include cotton-processing, and manufactures of clothing. Natchez occupies the site of a fort, built by the French, which passed to Great Britain in 1763. In 1779 the Spaniards secured it, and it was included in the U.S.A. in 1798. It was made a city in 1803. Pop. 15,296 (c. 50 p.c. negro).

**Nathan.** Biblical character. A prophet, he advised King David regarding the building of the Temple at Jerusalem, reproved him for the Bathsheba episode, and helped to secure the succession of Solomon.

**Nathan, HARRY LOUIS NATHAN,** 1ST BARON (b. 1889). British politician. Educated at S. Paul's School, he was Liberal M.P. for N.E. Bethnal Green, 1925-34, joining the Labour party in the latter year. Defeated in 1935 at Cardiff S., he was returned for Central Wandsworth two years later, and remained its member until raised to the peerage in 1940. After serving for some months as parliamentary under-secretary for war and vice-president of the army council, he was minister of civil aviation 1946-48, being made a privy councillor. Having acted from 1939 to 1943 as chief welfare officer first to the Eastern command, then to the London district, he retained the honorary rank of colonel. He was actively concerned with hospital work, being chairman of the Infants' Hospital, Westminster, and a governor of Westminster Hospital.

**Nathan, GEORGE JEAN** (b. 1882). American dramatic and literary critic. Born Feb. 14, 1882, he was educated at Cornell and Bologna universities, and joined

the staff of the New York Herald in 1905. Founder and editor (with H. L. Mencken) of *The American Mercury*, 1924-25, he was dramatic critic to *Vanity Fair*, 1930-38; *Life*, 1934-37; *Esquire*, 1935-46; *Scribner's*, 1937-39. Of his many publications the best-known include *The Critic* and *The Drama*, 1922; *Since Ibsen*, 1933; *The Entertainment of a Nation*, 1942, and an annual series of theatre books, the first of which was published in 1942.

**Nathanael.** Disciple of Jesus Christ. Practically nothing is known of him save that he came from Cana of Galilee (John 21, v. 2), and was brought to the Master by Philip (John 1, v. 45). Some scholars think he is identical with Bartholomew. The name, also spelled Nathaniel, means in Hebrew the gift of God.

**Natick.** Town of Massachusetts, U.S.A. In Middlesex co., it is 18 m. S.W. of Boston on the Charles river. It has a rly. station on the Boston and Albany rly. Manufactures include boots, shoes, clothing, etc.

**Nation, CARRIE AMELIA** (1846-1911). American temperance reformer. Born Nov. 25, 1846, she married David Nation, a lawyer and minister, in 1877. Her life was devoted to militant temperance activities, and she carried out a campaign of smashing public house fittings with an axe, frequently coming into conflict with the authorities. In 1908 she came to Great Britain to organize a similar campaign, but, receiving little support, returned to America the following year. She died June 11, 1911. *Consult* Carrie Nation, H. Asbury, 1930.

**National Anthem.** Musical composition with words, officially adopted for ceremonial use as an expression of loyalty to a national cause. National anthems are a comparatively modern notion, Great Britain's *God Save the King* (q.v.) being one of the earliest. This is said to have inspired Haydn to compose his *Emperor's Hymn*, which was the national anthem of Austria until 1918. This was in turn appropriated for the song *Deutschland, Deutschland über Alles*, written in 1848, which became the national anthem of Germany in 1919, superseding the imperial anthem, *Heil dir im Siegerkranz* (sung to the tune of *God Save the King*). *Deutschland* is one of several national anthems of which the words commemorate a particular event or period in the nation's history; others are the *Marseillaise* (q.v.), the *Braban-*

*çonne* (q.v.), and *The Star-Spangled Banner*, the anthems of France, Belgium, and the U.S.A. respectively, the last-named having been adopted as such in 1931. The national anthem of the U.S.S.R. was the *Internationale* until 1944, when a new one, composed by A. V. Alexandrov, was introduced.

During the first 21 months of the Second Great War, British listeners were able to hear a broadcast of the national anthems of an ever-increasing number of Allies played before the news every Sunday evening, until on the invasion of Russia the practice ceased on the plea of having become an absurdity. A complete list of national anthems, authors and composers, is given in *Everyman's Dictionary* of Music, ed. E. Blom, 1946.

**National Assembly.** Name taken by the body responsible for the opening stages of the French Revolution, and subsequently by other sovereign bodies in France, and elsewhere.

When the States-General met at Versailles in May, 1789, the three estates, nobles, clergy, and commons or third estate, *tiers état*, sat separately. The third estate invited the others to join in its deliberations, and on their refusal, decided in June to call themselves the National Assembly, claimed sovereign powers, and proceeded to act on this assumption. Having drawn up a new constitution, which Louis accepted, the national assembly was dissolved Sept. 30, 1791.

After the capitulation of Paris, a national assembly was chosen to treat with Germany for peace. It was elected under a law of 1849, and its 753 members met at Bordeaux, Feb. 13, 1871. Like its predecessor, it was a sovereign body, and was responsible for a constitution. Today the national assembly is the name given to the Chamber of Deputies and the Senate, when they sit together for the election of a president, the revision of the constitution, or some other special purpose.

In 1918, after the abdication of the kaiser, it was decided to call a German national assembly to decide the future of the country. The members were elected in Dec. and met at Weimar early in 1919. *See* Constituent Assembly; France: History; French Revolution.

**National Assistance Board.** *See* Public Assistance.

**National Convention.** Name given to the body summoned in Aug., 1792, to revise the constitution of France. Its predecessor, the legislative assembly dominated

by the commune of Paris, had suspended the king. The elections took place at once, 749 members being returned, and the convention declared the monarchy abolished and France a republic. In its fierce party conflicts took place, and its period of life covered the execution of the king and the Reign of Terror. Eventually it drew up the constitution known as the Directory, and on Oct. 26, 1795, it was dissolved. *See* French Revolution; Girondins; Jacobins; Mountain; Robespierre, etc.

**National Debt.** Total of the debts owing at any one time by a state or government. A state, like an individual, must limit its expenditure over a given period to its income for that period, or borrow to make up the difference. The ideal course is so to adjust taxation as to provide sufficient revenue each year for the anticipated expenditure of that year, with a slight margin for eventualities. But it is not always possible or desirable to do that, and borrowing is then resorted to.

Thus, in time of war state expenditure rises so steeply that it is impossible to meet it wholly from current taxation. The British national debt constitutes in its progressive expansion almost a record of the wars in which the U.K. has been engaged. In 1694 it stood at one million pounds; in 1763, after the Seven Years' war, at £146 millions; in 1784, when the American war was concluded, at £243 millions; after the close of the Napoleonic wars at £861 millions; in 1920 at £7,829 millions. It had fallen to £7,653 millions by 1929, but in 1946 it reached £25,000 millions.

Less spectacular additions may also be made by peace-time expenditure of a capital nature. Such additions in the U.K. have in the past been chiefly to finance state housing and other public works; the nationalisation of coal, electricity, transport, etc., after 1946, which involved the purchase by the state of various undertakings from their former private owners, was also financed by loans (or the issue of govt. stock). Elsewhere, national borrowing has been associated with the construction of rlys., roads, harbours, even towns.

Governments may borrow internally or externally. In internal borrowing the lenders are the general public and the institutions which comprise the state. External loans are subscribed by other governments or their nationals.

Thus, in the last century investors in the U.K. provided much of the capital needed by Dominion govts. as well as those of S. America and Russia. Before the Second Great War the interest annually paid on such loans constituted a valuable source of foreign income for Great Britain and helped to pay for her imports. To pay for wartime purchases a large part of this invested capital was sold and British income from abroad was correspondingly reduced.

During both Great Wars, and after the Second, the U.K. borrowed heavily from other members of the Commonwealth and from the U.S.A., but even so the internal part of the national debt far exceeded the external part.

Internal lending in the U.K. is represented by govt. securities, divided into: (i) the funded debt, including e.g. 3½ p.c. war loan, 2½ p.c. consols, 3½ p.c. conversion loan, which has been placed upon a more or less permanent basis; (ii) the unfunded debt, which comprises e.g. 3 p.c. and 2½ p.c. defence bonds and all issues of national savings certificates; (iii) the floating debt, which is for the most part temporary and includes treasury bills and treasury deposit receipts, both repayable within three months, together with advances made to the Treasury by the Bank of England and other government depts. The government repays these floating debt investments by making a fresh issue, sometimes for a sum larger than that being repaid, as an old issue is repaid. The same principle is applied to the longer dated loans constituting (ii). Repayment of these is frequently offered at the option of the government between certain given dates: e.g. the issue of 3 p.c. savings bonds made in 1941-42 was described as 3 p.c. savings bonds 1955-65. At any time after Aug. 15, 1955, the government may, but not later than Aug. 15, 1965, it must, repay the loan. If, say, in 1955 it can, owing to the monetary conditions then prevailing, borrow for a relatively long term at less than 3 p.c., it will probably issue a new loan to repay 3 p.c. savings bonds 1955-65. If prevailing interest rates in 1955 are higher than 3 p.c., it will allow the savings bonds to continue until 1965, and then issue another loan, at the best interest terms it can, to repay them. The first procedure is called conversion, and reduces the interest cost of the national debt; an example was the conversion of

£1,911 millions of the war loan issued during 1914-1918 at 5 p.c. to a 3½ p.c. loan in 1932, the holders at the time being offered the lower interest rate in future or their money back.

Longer term British government securities can always be sold on the London stock exchange, though, of course, the price at which they sell may be less than that at which they were bought. National savings certificates and defence bonds are repayable by the government at, or over, their original cost on demand or within a very short period.

Although the national debt constitutes a burden upon every individual forming the state—the interest payable on that of the U.K. represents more than £11 per annum per head of the whole pop.—to increase it, even seriously, is not in given circumstances altogether harmful. During the Second Great War the British national debt increased by some £17,000 millions, or about half the cost to the govt. of that war. Had taxation been imposed to meet the whole cost, the burden would have been intolerable. On the other hand, most of this state expenditure was paid out as wages, profits, rentals, etc., and continued borrowing from the general public had a beneficial effect upon the nation's economy since it reduced the amount of money in circulation and thus helped to prevent rise of prices. It also placed in reserve a vast sum upon which the public could draw to produce private demand for goods and services. Nevertheless, it is not good to allow the national debt constantly to increase, and during periods of relative prosperity budget surpluses are normally used to repay part of the debt.

**National Defence Contribution.** British tax on excess profits of industry imposed by the Finance Act of 1937 to pay for rearmament. As originally proposed, the tax was calculated on a complicated basis, and called forth such criticism that Neville Chamberlain substituted a straightforward additional tax on profits above £2,000 a year—5 p.c. for companies and 4 p.c. for firms and individuals, professional men being exempt. Imposed for a period of five years, the tax was expected to yield £25,000,000 a year, and this figure was in fact exceeded. The Excess Profits Tax (*q.v.*) of 1940 was an alternative to the N.D.C., the higher figure being payable.

**National Fire Service.** Name given to the fire brigades of the U.K. on their reorganization in 1941, when control was transferred from local authorities to a central administration. It was dissolved by an Act of 1947. *See* Fire Service.

**National Gallery.** Term usually applied to a collection of pictures and statuary belonging to a nation, and maintained and added to by public funds. One of the first of such galleries was founded by Napoleon I when he converted the Louvre into a national museum, depositing in it a collection of works of art from the treasure-houses of Europe.

The National Gallery in London was begun by the purchase by the British government of the Angerstein collection of pictures in 1824. Later purchases, bequests, and gifts have made it one of the most representative collections in Europe. The pictures are arranged according to schools of painting, and the collection is particularly rich in examples of the Flemish and Dutch schools. The Florentine, Venetian, and Umbrian schools are shown almost equally well, among the gems of the collection being masterpieces by Filippo Lippi, Botticelli, and Michelangelo, Titian, Tintoretto, and Veronese, della Francesca, Perugino, and Raphael. Among the Spaniards Murillo, Velazquez, and Goya, and among the Frenchmen Claude and Poussin are magnificently represented. The British school is displayed from its beginnings, the collection of Turners being especially fine.

The existing gallery on the N. side of Trafalgar Square, once derisively styled "the national cruet-stand" from the arrangement of its somewhat ineffective cupolas, was completed and opened in 1838, and re-opened after enlargement in 1861. It is controlled by trustees, and a director appointed by the first lord of the Treasury.

During the Second Great War, many pictures were removed for safety to the university of Wales at Bangor, the National Library of Wales at Aberystwyth, and Mentmore House, Bucks. Owing to the increasing weight of enemy bombs

used and the development of aerodromes near these repositories, a store was built in the Manod slate quarry, Blaenau Ffestiniog.

From Oct. 10, 1939, to April 10, 1946, a series of midday concerts, organised by Dame Myra Hess, was given at the National Gallery. The concerts, which numbered 1,698, were attended by some 800,000 people in all. During the Second Great War the buildings were damaged by enemy bombs, many galleries remaining closed for several years after the war.

In 1946 the report was issued of the Massey committee on the functions of the National Gallery and the Tate Gallery and the working of the Chantrey bequest. This emphasised that the National Gallery was a group of various masterpieces rather than a historical collection. Philip Hendy, who succeeded Sir Kenneth Clark as director, organized an exhibition of cleaned paintings by old



National Gallery, facing Trafalgar Square, London

masters which aroused great interest and some criticism.

In Edinburgh is the National Gallery of Scotland, a building in Ionic style, 1850-58, with paintings of the Italian, Dutch, and French schools and an unrivalled collection of Raeburns.

In the U.S.A. the National Gallery of Art, in Washington, D.C., was established by Act of Congress in 1937 and inaugurated in 1941 as a gift to the nation by Andrew Mellon. The gallery is 785 ft. long and one of the world's largest marble structures. It cost some \$15,000,000 (£3,750,000) provided by Mellon, who also gave his collection, 127 paintings of the various European schools and 26 pieces of sculpture. All the collections amount to more than 1,000 paintings and pieces of sculpture and 14,000 prints. The gallery is a bureau of the Smithsonian Institution. *See* Hermitage; Louvre; National Portrait Gallery; Tate Gallery.

**National Government.** Name of the all-party administration which governed Great Britain 1931-40. It was formed in Aug., 1931, by the Labour prime minister, Ramsay MacDonald, as the result of the economic crisis of that year and the split in the Labour govt. and party over the proposals to meet it. Few of his colleagues chose to support him in the new administration, and the majority of the Labour party went into opposition. Those who remained with him styled themselves National Labour. The new govt. also included Conservatives, National Liberals (following the leadership of Sir J. Simon, in full support), and Liberal Nationals (led by Sir H. Samuel and holding reservations on the question of free trade). A few Liberals followed Lloyd George in support of the opposition. An appeal to the electorate followed in Oct., when the govt. asked for a "doctor's mandate" to surmount the crisis. The Conservatives, returning 472, formed a big majority of the new house, also of those supporting the govt., only 48 of the other three "National" parties being returned. Nevertheless the label National and the sharing of offices were retained and MacDonald remained premier until his resignation in 1935, when Stanley Baldwin, the Conservative leader, succeeded him. The Liberal Nationals had meanwhile gone into opposition. After the 1935 election the govt. was still nominally National though virtually Conservative. Baldwin retired in 1937, and was succeeded by Neville Chamberlain. When Great Britain declared war on Germany in 1939, the Labour opposition declined all offers of a coalition under Chamberlain's premiership. But by May, 1940, as a result of the debate on Allied failures in Norway, it had become clear that a broadening of the basis of the govt. was essential for the purpose of waging the war fully. The Labour party indicated their willingness to enter a new coalition under Winston Churchill. Chamberlain therefore resigned, and the National govt. gave place to the Churchill coalition govt. *See* Baldwin, 1st Earl; Chamberlain, N.; Conservative; Labour Party; Liberal; MacDonald, J. R.; Means Test.

**National Guard.** Volunteer militia of the U.S.A. The guard is organized in state forces with each state governor as commander-in-chief, and it receives

instruction, arms, and equipment from the U.S. army, which also pays wages for armoury drills and 15 days of field training each year. Members are liable to be called to quell disturbances or to serve as federal troops.

An earlier National Guard was the body of citizens organized in Paris by Lafayette at the outbreak of the Revolution, 1789.

**National Health Insurance.** See Insurance, National.

**National Health Service.** See N.V. section at end of Vol. 10.

**National Hunt Committee.** Self-elected body responsible for the conduct of horse racing under National Hunt rules, i.e. cross-country racing, steeplechasing (q.v.), and hurdling. It is similar to the Jockey Club (q.v.).

**Nationalisation.** Transfer of the ownership and control of property from individuals or groups to the nation as a whole. Property to which nationalisation may be applied includes: (1) land and all rights attaching to it, together with machines and other equipment, e.g. rlys.; (2) certain rights only in the land, e.g. mineral rights, development rights; (3) commercial and industrial undertakings, with all their assets and liabilities, contractual rights and duties, transferred as "going concerns," e.g. gas undertakings; (4) monopoly rights assumed by the state, e.g. issue of currency and coinage, manufacture of tobacco, organization of foreign trade.

Nationalisation of property or of an economic activity may be introduced with any of the following objects: (1) to advance the safety of the state or to increase the security of the existing govt.; (2) to strengthen the control by the govt. of economic resources; (3) to secure monopoly gains and unearned increment for the public revenue; (4) to increase technical efficiency by unifying control, eliminating competition, or replacing the motive of profit-making by the motive of public service; (5) to organize large-scale research; (6) to utilise fully resources incompletely developed by private enterprise; (7) to provide commodities and services not already furnished by private suppliers; (8) to prevent the private ownership and control of great aggregations of capital and economic power; (9) to bring about a more even distribution of the national income.

Nationalisation may be effected by (1) confiscation, i.e. the taking of the property from the existing

owners without compensation, a method adopted in e.g. Russia in regard to land, and a common incident of conquest and colonisation; (2) purchase from the current owners, the price being determined by arbitration, the market quotation for shares, govt. decree, or parl. statute, and paid in cash or by the issue of govt. bonds of limited marketability: such a purchase may involve an element of confiscation, if the owner is made poorer through the compulsory transfer of his property; (3) direct govt. investment, state funds being used directly to finance the construction of a new undertaking, such as a rly. or irrigation works.

#### Methods of Operation

Nationalised properties may be administered (1) directly, through a govt. dept.: an outstanding example of this type is the British Post Office, answerable to parliament through the Postmaster-General; (2) through special corporations created by the legislature, and invested with a national monopoly and a varying degree of autonomy, e.g. the British Broadcasting Corporation, the National Coal Board, the Port of London Authority; (3) through regional boards, closely linked with county councils and other local govt. authorities, e.g. the national hospital service.

In many countries some or all of the railways are nationalised, sometimes to encourage economic development and wider settlement, sometimes for defence, sometimes to increase the efficiency of transport. Many countries have nationalised posts, telephones, and telegraphs. A partial nationalisation of hydro-electric generation is common in mountainous countries. In the U.S.S.R. and territories politically allied, nationalised industry is the rule, although some private agriculture and much private internal trade and some types of private manufacture are permitted. Most countries have a state central bank in a similar position to that of the Bank of England since 1946.

#### Arguments for Nationalisation

Those who advocate nationalisation argue: (a) it is undesirable that personal profit should be the chief motive of economic activity, with the increase of public welfare or public usefulness merely a by-product; and, moreover, it is often possible to increase private profit more by withholding goods or services than by providing them; (b) competition is wasteful

of resources, so wasteful that there is an inherent tendency for private undertakings to combine to lessen competition; this combination may result in unjustifiable increases in the price of goods, and concentrates too much economic power in the hands of a few individuals, who control large aggregations of capital and hence wield great political power without being responsible to parliament; (c) over an increasing part of the economic field monopoly is natural, that is, technically much more efficient than competition, and monopoly gains should be secured for the public; (d) in the state of today extensive planning of the use of economic resources is necessary and such planning is much facilitated by unified control; (e) nationalisation makes possible the fullest exploitation of resources, the utmost development of technique through large-scale research, the employment of the best technical and managerial ability, the greatest economy through bulk purchase, etc.

#### Arguments against Nationalisation

Those who oppose nationalisation argue: (a) there is no adequate substitute for private profit as an incentive, and when that incentive is removed managers lack the urge to be efficient: when competition is absent they tend to become complacent, lacking in initiative, and unwilling to experiment or to take risks; (b) nationalised undertakings become too rigid and over-centralised: men on the spot are unable or unwilling to take decisions, and there are in consequence unreasonable delays in making necessary or desirable changes of policy; (c) any tendency on the part of monopolies to exploit the public can be met by control of monopolies without unnecessary interference in their management; (d) nationalisation places numerous important and lucrative positions within the gift of the govt., and thus tends to political corruption; (e) extensive govt. investment in the existing equipment of an industry may make it more difficult than under private enterprise to secure the introduction of new machines embodying fresh discoveries and inventions.

Problems incidental to the running of new state enterprises are: (1) Method of organization and management: what structure of authority will best retain for nationalised undertakings flexibility, adaptability, and responsiveness to changes in demand,

supply, and technique, and ensure that employees at all levels work effectively? (2) How can the interests of consumers be safeguarded when they are no longer able to express their dissatisfaction by giving their orders to other suppliers? (3) What are to be the tests of the efficiency of a nationalised undertaking, particularly if, as may often be the case, the undertaking is not expected to work at a cash profit? Standards of efficiency can probably be fixed by publishing details of working costs in relation to output, and comparing these with those of similar undertakings elsewhere. (4) What is the best method of exercising parliamentary control over the bodies which are entrusted with the conduct of nationalised industries? Trial and error, aided by the developing science of management, which uses as two of its principal tools statistical method and psychological investigation, must provide the solutions of these problems.

**Nationalist.** Name given to any political party that works for the independence of a country that is part of, or under the domination of, a larger unit. There has been a tendency also to apply the label to a party that opposes what it may consider to be disruptive forces within a state. Thus Gen. Franco's party in Spain adopted the title Nationalist.

The Irish Nationalist party appeared in an organized form about 1870 under the leadership of Isaac Butt, and was strong in the British house of commons after the general election of 1874, becoming still more so under the direction of C. S. Parnell. Its main object was to secure home rule for Ireland. With about 80 members it exercised considerable influence in British politics, especially when, as in 1892-95, the two main parties therein were fairly evenly balanced. Split after Parnell's appearance in the divorce court in 1890, the party was reunited under J. E. Redmond, but it disappeared at the election of 1918, its place being taken by Sinn Féin (*q.v.*).

**Nationality.** Generally, the sum of the characteristic differences between groups of persons which arise from divergences of cultural tradition and language. Such a group is called a nation, and should be distinguished from a group living under the same government, which is usually called a state. The boundaries between nationalities, even when geographically separate, do not always correspond with the

frontiers of states. Sometimes one state includes groups of several national origins.

There is no clear demarcation between the characteristics of a small local group and the more important and permanent characteristics of a nationality, as there is no clear difference between a dialect and a language; but in general a nationality involves a traditional outlook on life, traditional quasi-religious ideals, and a fully developed mode of expression in a language with a literature. Nearly always nationality is connected with some country or district, even when, as in the case of the Jews, the connexion is one of memory.

From the sense of nationality arises the political enthusiasm called nationalism. This originates either from oppression or from an exaggerated sense of the importance of the group. Thus the nationality of the Italians in 1860 was felt to be oppressed by the Austrian government in Italy; but after the victory had been won against Austria, the formerly oppressed group developed an exaggerated sense of its own importance.

Nationality may be, or may be made to serve as, the basis of a distinct form of government; but it may in certain cases be well developed within the same state together with other nationalities. Of the formative elements in nationality the most important is tradition; by which is meant an inherited admiration for certain types of character and certain kinds of life. In almost all nationalities there are quasi-mythical national heroes who are believed to have been the embodiment of the national ideal; and in every nationality its history is believed to be a record of success and progress of its own excellence. These beliefs, although insufficiently based on evidence, are not necessarily pernicious; but the discovery of the actual scientific facts as to descent, language, and moral or religious tradition has tended to weaken the control of the idea of nationality over the minds of men. See *Ethnology*, *Language*.

**National Liberal.** Political party label adopted at various times in various countries. The most notable and influential example is the National Liberal party in Germany between 1866 and 1918. It was "national" because it originally advocated union between N. and S. Germany, as achieved in 1871. From that year until 1878 the party helped Bismarck to carry out many reforms

and supported him in his opposition to the R.C. church. But it broke with him over his experiments in state socialism and protection, and its influence declined.

In the U.K., on the break-up of the Lloyd George coalition govt. in 1922, the former Liberals of the coalition, under Lloyd George, called themselves National Liberals, as a distinction from the independent Liberals under Asquith; but the two branches were reunited in time for the 1923 election as "Liberals without prefix or suffix." In 1931 those Liberals who followed Sir J. Simon in full participating support of Ramsay MacDonald's National government called themselves National Liberals (or, popularly, Simonites), whereas those who followed Sir H. Samuel in holding reservations on the question of free trade or protection adopted the name of Liberal Nationals (Samuelites), until, seceding from the government, they became once again Liberals. The term was still in use during the elections of 1945 and 1950 for Liberals prepared to support the Conservative leader.

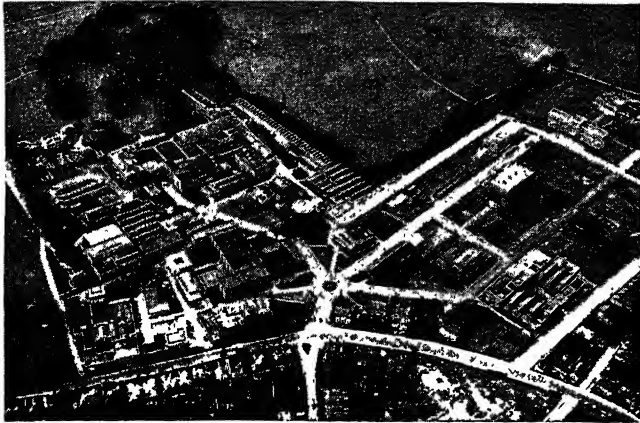
**National Liberal Club.** London political club. It was formed, Nov. 16, 1882, with Gladstone as president, to further the interests of Liberalism, and to provide a central club in London for Liberals throughout the kingdom. Among its objects was "to found, in connexion with the club, a political and historical library, to be called the Gladstone Library, as a permanent memorial of the services which the Right Hon. W. E. Gladstone has rendered to his country." The inaugural banquet was held on May 2, 1883.

The club-house, in Whitehall Place, overlooking the Thames Embankment, was opened in 1887. The Gladstone Library was opened in 1888. The membership is about 3,650.

**National Library of Scotland.** Founded in 1682, this library belonged to the Faculty of Advocates until 1925. It has the privilege of receiving a copy of every book entered at Stationers' Hall. It is housed in the Parliament House, Edinburgh, and contains over 500,000 volumes, as well as many valuable MSS. dealing with Scottish history. It is open to all engaged on literary work.

**National Park.** Area of relatively wild country publicly owned and nationally administered so that its characteristic beauty is preserved and facilities for its public enjoyment are provided.





National Physical Laboratory. Air view of the extensive buildings of the research laboratory at Teddington, Middlesex  
*Crown copyright*

Wild life and existing buildings of interest are protected, and new building is controlled.

In July, 1945, a National Parks Committee appointed by the minister of Town and Country Planning recommended the establishment of 12 national parks in England and Wales: the Lake District, Peak District, Dartmoor, Yorkshire Dales, Exmoor, South Downs, Roman Wall, north Yorkshire moors, Brecon Beacons and Black Mountains, Norfolk Broads, and certain stretches of N. Wales and the Pembrokeshire coast. The National Parks and Access to the Countryside Act, 1949, set up a commission to schedule and preserve national parks and areas of outstanding natural beauty, and gave powers to establish nature reserves.

S. Africa possesses some notable national parks, e.g. the Natal National Park, embracing 20,000 acres of the northern part of the Drakensberg mts. Kruger National Park, between the Sabi and Limpopo rivers, was established as a game sanctuary in 1898 and has an area of 8,000 sq. m. In Cape Province there are the Kalahari Gemsbok, Addo Elephant, and Mountain Zebra national parks, many being also game preserves. The principal national park in Australia is at Port Hacking, N.S.W., 15 m. S.W. of Sydney, and covers an area of 58 sq. m. with a frontage on the Pacific of 7 m. The Albert National Park in the N.E. Congo is maintained by the Belgian govt. as a game and nature preserve.

The U.S.A. has some fine national parks. They are administered by the department of the Interior. The best known are the

Glacier (997,487 acres), a rugged mountain region with 200 glacier-fed lakes; the Grand Canyon (645,136 acres), the largest example of erosion in the world; the Mammoth Cave of Kentucky (50,548 acres); Mount McKinley, Alaska, (1,939,000 acres), which includes the highest mountain in N. America; Mount Rainier (241,526 acres), the greatest single-peak glacial system in the U.S.A.; Yellowstone Park (2,213,207 acres), which has more geysers than the rest of the world; and Yosemite (756,295 acres), which has unique lofty cliffs and three groves of giant sequoias.

There are some 30 national parks in Canada with a combined area of 29,704 sq. m., the largest being Jasper (*q.v.*), 4,200 sq. m.

**National Physical Laboratory.** A research laboratory founded in 1900 at Teddington, Middlesex, in Bushey House, an old royal residence granted for the purpose. The laboratory, covering 50 acres, consists of 16 large and a number of smaller buildings. It was controlled by the Royal Society until 1918, when it was absorbed by the newly constituted department of scientific and industrial research, though the president of the Royal Society is *ex officio* chairman of the general board, while the executive committee includes amongst its members representatives of the Royal Society.

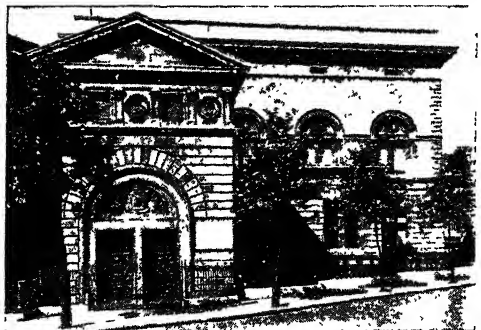
The main functions of the laboratory are to carry out research; to establish and maintain precise standards of measurement and physical constants; and to make tests of instruments and materials. It also undertakes investigation of special problems. Payment is received for work done for outside bodies, and the laboratory receives a govt. grant. Research undertaken includes all branches of physics.

There are a number of departments, each under a superintendent, and each specialising in one branch of physics. Increasingly important is the aerodynamics department, which operates under the control of an aeronautical research committee appointed by the Air ministry. The Wilham Froude Laboratory carries out tests of ship hulls and propellers.

Results of researches are published in an annual report, and a collection of abstracts of all the papers contributed by the laboratory to the scientific and technical press is issued each year. Its directors have included Sir Richard Glazebrook, Sir J. E. Petavel, and Sir Charles G. Darwin.

**National Portrait Gallery.** Building in St. Martin's Place, London, W.C.2. It contains about 3,500 paintings, sculptures, and drawings of men and women who have figured with distinction in the history of the United Kingdom. No portrait of any living person, except of the reigning sovereign and of his or her consort, is admitted, and no modern copy of an original portrait. The gallery was founded by Act of parliament, June 6, 1856. Opened at 29, Great George Street, Westminster, 1859, the collection was housed at S. Kensington, 1869-85; at Bethnal Green Museum, 1885-95.

The existing structure, built 1890-95 in Italian style from designs by Ewan Christian, was



National Portrait Gallery, St. Martin's Place, London

opened April 4, 1896, at a cost of £96,000, of which William Henry Alexander, of Shipton, Andover, Hants, contributed £80,000 and the government £16,000 and the site. An extension, the cost of which was defrayed by Lord Duveen, was opened in 1933. The Scottish National Portrait Gallery, Queen Street, Edinburgh, built in 14th century Gothic style from designs by Dr. Rowand Anderson, was opened in 1889. The building cost over £80,000, and was the gift to the nation of John R. Findlay (1824-98), proprietor of The Scotsman.

**National Provincial Bank, Ltd.** English banking company. Established 1833 as the National Provincial Bank of England, the first bank formed in London with the express object of developing a number of provincial offices controlled from London, it was registered as a limited company in 1880. In 1918 it amalgamated with the Union Bank of London and with other banks, then becoming known as the National Provincial and Union Bank of England. The present shorter form was adopted in 1924. By that time the bank had become affiliated with Coutts & Co. and also with Grindlay & Co., the Indian bankers (now Grindlays Bank, Ltd.), who, however, retained their separate identities. The bank has a substantial interest in Lloyds and National Provincial Foreign Bank,

Ltd., and the Bank of British West Africa, Ltd. There are 1,223 branches and offices: head office, 15, Bishopsgate, London, E.C.2. Paid-up capital, £9,479,416.

**National Register.** Census of Great Britain taken during the two Great Wars to ensure that the best use should be made of man-power, and to make rationing possible. The register compiled Aug. 15, 1915, covered all inhabitants of Great Britain between the ages of 15 and 65, and was used by the government when compulsory service was introduced. On Sept. 10, 1939, the minister of Labour introduced a National Registration Bill providing for a complete register of the whole country. Schedules were distributed during the week before Sept. 29, which was fixed as National Registration Day, and on their collection identity cards were issued, similar to the registration cards of the First Great War.

The procedure for taking the register was similar in both wars. The country was divided into a number of areas—65,000 in 1939—each of which embraced 200-300 households. Details required were name, sex, date of birth, whether or not married, occupation, membership of reserve or auxiliary forces or civil defence. Registered persons were allotted a number. The register was retained after the end of the war. *See Identity Card.*

a committee appointed by the chancellor of the Exchequer to consider how to check personal expenditure and enforce economy throughout all ranks of society, made two recommendations: that a new type of security—the savings certificate—should be issued; and that a national savings committee should be set up to organize an appeal to the whole country. The first savings certificates cost 15s. 6d. and were worth £1 on their fifth anniversary. They could be cashed at cost, plus accrued interest, at any time. The interest was free of income tax, and a limit of 500 was therefore set to the number any one person might hold. The terms on which certificates were issued have been modified from time to time, but the basic principle remains.

The introduction of this novel and ingenious financial instrument, which concentrated attention on the growth of capital instead of on the periodical distribution of interest, was an important factor in the success of the savings movement.

#### Between the Wars

Before the end of the First Great War the national savings committee had established local savings committees throughout the country, and brought into being over 40,000 savings groups. The movement was non-political; local authorities and schools helped. The committee also conducted campaigns for "large money" savings, and raised in all £4,040 million.

In 1919 the appeal to save to help win and pay for the war gave way to appeals to save for wise spending. The Post Office savings bank and trustee savings banks were brought into closer association with the national savings committee. The interest of local authorities was maintained and stimulated by empowering them to borrow through the public works loan board up to one half of the value of certificates sold in their area. This arrangement was later modified by the Local Authorities Loan Act, 1945, whereby all local authorities borrow from the consolidated fund, into which the proceeds of national savings flow.

Elected representatives of local savings committees were added to the national savings committee, which had previously consisted solely of nominated members representing various interests. At the same time a body meeting once a year and numbering some 250 members, also elected by local

## NATIONAL SAVINGS MOVEMENT

Lord Kindersley, President, National Savings Committee, 1930-46

*The story of the growth of a great British thrift movement, and an explanation of its objects, by the man whose guidance helped to ensure its success*

The national savings movement began in 1916. Organized saving by persons of small means had its foundation laid by the trustee savings banks as early as 1810, followed by the Post Office savings bank in 1861. During the 19th century friendly societies and other corporate bodies also played their part in the encouragement of thrift; but until 1916 there was no nationally organized effort to promote saving.

In England and Wales the movement had at its peak an organization comprising several hundred thousand voluntary workers, members of some 1,340 local savings committees, and secretaries and collectors of some 300,000 individual savings groups formed in factories, offices, schools, streets, and villages, social organizations, and units of H.M. forces. Volun-

tary workers in the movement are assisted by a relatively small official staff, and stimulated, encouraged, guided by the national savings committee with h.q. in London and regional offices in the provinces, each with its commissioner and staff. The national savings committee, appointed by the chancellor of the Exchequer, initiates the general plans for the savings campaign and is responsible for advertising and promoting the sale of various forms of national savings securities and investment in savings banks. In Scotland and Northern Ireland the work is supervised by autonomous committees which follow broadly the plans devised by the national savings committee.

During the First Great War dangerous inflation had been reached by 1915. Early in 1916

savings committees and called the national savings assembly, was established so that the work of the movement could be debated.

In Sept., 1939, there were 41,521 active savings groups, 23,755 of them in schools. During the Second Great War the national savings movement again helped to mobilise the nation's financial resources. The organization throughout the country was strengthened. The trade union movement and the employers' federations gave full support, 77,000 groups being established in places of employment. The number of school groups increased to 30,626, and more than 120,000 new groups were formed in streets and villages. The provincial organization was strengthened by the setting up of regional advisory committees composed of the assembly members in each of the regions. Special advisory committees dealt with the problems of particular sections of the public. The women's voluntary services (W.V.S.), the women's institutes, and other social bodies through their local branches provided many thousands of new recruits for the movement's committees and groups. Banks, insurance companies, and all the manifold commercial, business, and financial organizations gave their assistance; and the campaign was supported by widespread advertising and publicity in the press, the cinema, and by the B.B.C. Special weeks were organized in which local committees fixed sums of money as specific objectives. War Weapons weeks 1940-41, Warship weeks 1941-42, Wings for Victory weeks 1942-43, and Salute the Soldier weeks 1943-44, raised £2,259,000,000, of which £633,000,000 was in small savings.

After a series of Thanksgiving weeks in 1945, when £512,000,000 was raised, the movement again restricted its money-raising efforts to the small saver. A rally at the Albert Hall in 1946 celebrated the movement's 30th anniversary.

In 1950 there were 17 million live holdings in savings certificates; 21½ million accounts in the Post Office savings bank; 4½ million accounts in the trustee savings banks; and nearly 4 million holders of defence bonds. The amount standing to the credit of these holders, including stock on the savings bank register, amounted to over £6,100 million, including interest accrued. The total put into savings between

Nov. 1939 and Sept., 1945, reached £9,851 million, of which £3,870 million was in so-called "small" savings.

**National Service.** Service on behalf of the country in time of emergency, either in the armed forces or in essential work. In the First Great War a ministry of National Service was created, Aug., 1917; in Nov., 1917, it took over from the army the direction of recruiting. It was merged in the ministry of Reconstruction in Nov., 1918. During the Second Great War national service was the responsibility of the minister of Labour, whose department was renamed the ministry of Labour and National Service in Dec., 1939. The minister had the task of allotting man-power between the armed forces and the vital war industries, and after the war retained responsibility for the call-up for compulsory service in the forces. Under the National Service Acts, 1947, male British subjects ordinarily resident in the U.K. who were 18 or over and under 26 were, after Jan. 1, 1949, liable to serve in the armed forces for 18 months' whole-time service and afterwards for 4 years' part-time service in an appropriate auxiliary unit. A person may ask to be called up at 17½. During the part-time service he may be called on for 60 days' service in all, but not more than 21 days in one year. Provision is made for further education during whole-time service, for reinstatement in civil employment, and for conscientious objectors. See Compulsory Military Service; Man Power; Military Service Acts.

**National Socialism.** Details of this German political philosophy will be found under Nazism.

**National Sporting Club, THE.** Headquarters of British boxing. Originally founded on the site of Evans's old house in King Street, Covent Garden, London, in 1891, it issues its own code of rules. The 5th earl of Lonsdale was president from its inauguration to his death (1944). See Boxing.

**National Stud.** Stud farm for thoroughbred horses, the property of the British Government and administered by the ministry of Agriculture. It was originally established in 1915 at Tully, co. Kildare, as a result of a gift of Lord Wavertree (formerly Col. Hall Walker), and transferred in 1942-43 to Gillingham, Dorset. In practice the stud is conducted on similar lines to those of private or commercial studs. Yearlings

are offered for sale by auction, except a few which are leased to private owners for racing. The stud also maintains stallions, which serve a limited number of mares.

**National Theatre.** The project to institute and build a national theatre in Great Britain was launched in 1908. Almost the last European country to realize and acknowledge the value of drama as a national institution (France recognized the need by founding the Comédie Française in 1680), Great Britain at first depended for the formation of this scheme on the generosity of wealthy benefactors. It was launched under the title of the Shakespeare Memorial National Theatre, and a subscription list was opened, headed by Sir Carl Meyer, with £70,000. The theatre was to have been built and opened in celebration of the Shakespearian tercentenary in 1916, but the First Great War intervened.

By 1936 the original fund had increased to £150,000; a site in London was bought for £75,000. This comprised 17,000 ft. on an island site in Cromwell Road, S. Kensington, facing the Victoria and Albert Museum. Plans by Sir Edwin Lutyens and Cecil Masey provided seating accommodation for over 1,000, with a stage suitable for both intimate and spectacular plays. Two or three plays were to be presented every week, and nine added annually to the repertory, three Shakespearian, three classic, and three contemporary, and a permanent company of 25-30 players engaged on yearly contracts, the management to be controlled by a director, subject to the governing body, itself nationally appointed.

The Second Great War held up further development of plans. By 1945 the S. Kensington site was considered too small, and the L.C.C. leased to the trustees a site on the S. bank of the Thames (midway between Hungerford and Waterloo bridges) in exchange for the one in Cromwell Road. It was here proposed to erect two theatres, one to accommodate 1,200, and the other to seat 500. Prospects of building were advanced in 1946 by an agreement between the Shakespearian Memorial National Theatre committee and the Old Vic. The S. bank site, however, was first used for temporary buildings of the 1951 Festival of Britain.

In March, 1948, it was announced that the government proposed to supplement the Committee's

funds up to £1,000,000 to meet the cost of building the theatre, and the National Theatre Act, 1949, gave effect to this.

**National Trust.** A British society for preserving places of historic interest or natural beauty. Founded in 1895, and given statutory powers in 1907, it is governed by a council, half nominated by learned societies, and half by members of the Trust. The National Trust Act, 1937, extended the powers of the Trust to hold properties as investments, and extended the aims of the trust to include the preservation of buildings, etc., of national, architectural, historic, or artistic interest, the protection and augmentation of their amenities, and the acquisition of furniture, pictures, etc., having a similar interest.

National Trust property is acquired either by purchase or by gift. When property is given no death duties are payable. Estates are in general leased to individuals, who are bound to allow access to the public at intervals. Beauty spots owned by the trust include Stonehenge; Leith Hill, in Surrey; Bolt Head, Devon; Longshaw Moor, near Sheffield; and tracts in the Lake District and the New Forest. Among private estates presented to or acquired by the National Trust are Barrington Court, near Ilminster; Bateman's, Rudyard Kipling's house at Burwash, Sussex; Lord Astor's estate of Cliveden, at Cookham-on-Thames; and Sir Charles Trevelyan's estate at Wallington, Northumberland, at the time of its presentation the largest ever made over to the trust. Other buildings of interest include the George Inn, Southwark, and Flatford Mill, Suffolk, made famous by Constable's painting.

The trust's full name is the National Trust for Places of Historic Interest or Natural Beauty; the offices are at 7, Buckingham Palace Gardens, London, S.W.1. The Scottish National Trust is an independent body, and owns among other property the Pass of Glencoe. See Ancient Monuments; consult On Trust for the Nation, C. Williams-Ellis, 1946, etc.

**National Unions.** Voluntary associations for certain purposes of persons, corporations, and groups within a country: for example, the National Union of Manufacturers, the National Union of Mineworkers. National unions may be associations of employers or of employees, and may be registered trade unions. Most of

them first began as organizations concerned only with one branch of trade or industry or one craft; and frequently they had at first only a localized interest. But most associations of employers and employed have found it advisable to amalgamate or federate with others having allied interests. The whole tendency of recent years has been towards ever larger associations, culminating in this country in the Federation of British Industries, the British Confederation of Employers, the Association of Chambers of Commerce, the Trades Union Congress General Council, and the Scottish Trades Union Congress General Council. From 1932 to 1946 the membership of trade unions increased from 4.4 millions to 8.7 millions, yet the number of trade unions decreased from 1,081 to 753, and of these 17 unions have practically two-thirds of all the members. The Official Directory of Employers' Associations, Trade Unions, Joint Organizations, etc. (1947), includes 1,943 Employers' Associations, most of which are affiliated to national unions, federations, and confederations, and 814 trade unions and other employees' associations, most of which are affiliated to the Trades Union Congress, either directly or through national federations. Consult The Industrial Relations Handbook, particularly Section III and Section XIII.

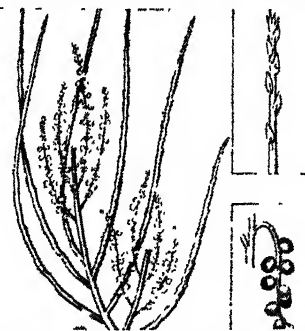
**National University of Ireland.** Irish university, founded in 1908. It arose owing to the demand of the Irish Roman Catholics for university education, and is in a sense the successor of the Royal University of Ireland, dissolved in that year, two of whose colleges—viz. University College, Cork, and University College, Galway—are included in it; while a third university college was opened in Dublin. S. Patrick's College, Maynooth, is a recognized college. It is controlled by the Roman Catholics, although there are, strictly speaking, no religious tests. Degrees are granted in arts, philosophy and sociology, Celtic studies, science, law, medicine, engineering and architecture, commerce, and agricultural and dairy science. Irish is obligatory for matriculation. The constituent college at Dublin occupies premises on Earlsfort Terrace. See Cork; Dublin; Galway; Ireland; Education.

**National Wealth.** The source of the incomes of the people of a nation, i.e. the source of the supply of goods and services avail-

able to them. The national wealth includes all those things that may have an exchange value, e.g. land and its various capacities for profitable use in industry and trade; natural resources, such as forests, minerals, water supply, etc.; the stock of buildings and their contents, such as machines, vehicles, furniture, industrial materials, food, etc.; the social framework to facilitate production, exchange, and distribution; and the various skills of the inhabitants; together with investments abroad and other rights which entitle the nation or individuals within the nation to receive goods from abroad, and the nation's stock of gold and other forms of money having an intrinsic value. No complete valuation of Great Britain's national wealth exists. The Economic Survey for 1950 estimated the value of the national income during 1950 (i.e. the flow of goods and services derived from the national wealth) at about £10,000,000,000.

**Native** (Lat. *nativus*, natural). Mineralogical term. It is used to describe minerals which consist of a single element, generally a metal, which is in the free state, i.e. not combined with any other element. Gold, silver, platinum, mercury, copper, and arsenic commonly occur thus. Sulphur and diamond (carbon) are instances of native non-metals.

**Native Currants** (*Leptomeria billardieri*). Shrub of the family Santalaceae, native of Australia.



Native Currants. Branches with flowers. Inset, above, end of branch with leaves; below, fruit

The numerous slender branches are erect, and without leaves except near their extremities, where they are very small. The minute white flowers are borne in spikes and produce small greenish-red, currant-like berries, which are fleshy and edible. They are acid and somewhat astringent, but they make a good preserve and a

cooling, acid beverage. They are not related to the British garden currants, or to the dried currants of E. Europe.

**Nativity.** Name of several festivals in the Christian churches. That of Christ's Nativity (Lat. *Festum Nativitatis*; Fr. *Noël*), usually known as Christmas Day, has been celebrated since the 5th century on Dec. 25. The Nativity of the B. V. M., a Roman Catholic festival, mentioned in the 9th century, is kept by Greeks and Latins on Sept. 8; and that of S. John Baptist on June 24. Representations of Christ's Nativity occur often in carvings on early sarcophagi, ivory carvings of the 8th and 9th centuries, in MS. illuminations, stained glass, and wall-paintings. On the Morning of Christ's Nativity is the title of an ode by Milton, 1629. Nativity plays, or dramatic representations of the circumstances surrounding the birth of Christ, with shepherds, wise men, and angels among the characters, are derived from the medieval mystery plays performed originally in churches. They were revived in a more sophisticated form in many English churches and chapels in the 20th century, notably at St. Hilary, Cornwall, and S. Martin-in-the-Fields, London, as a part of the Christmas celebrations. In astrology the word nativity is used as a synonym for horoscope. See *Mystery Play*.

**Natrolite.** In mineralogy, a hydrous calcium sodium aluminium silicate of the zeolite group. Semi-transparent to transparent, it is yellow, red, grey, or colourless with a glassy lustre, and is found in cavities in basalt and related rocks. Natrolite is used as a gem and for ornament, as it will take a high polish. See *Zeolite*.

**Natron.** Term used to describe hydrated sodium carbonate,  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ . Native soda, sometimes called natron, found in the region of desert lakes, consists of sodium sesquicarbonate or trona ( $\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$ ).

**Natron.** Lake of Africa. It is about 20 m. S. of Lake Magadi. Both these lakes contain enormous deposits of soda. See *Magadi*.

**Natterjack** (*Bufo calamita*). Running-toad or golden-back. It is a toad with a general resemblance to the common species, yet with several points of distinction that make identification easy at sight. It is of rather slighter build, and the limbs are proportionately shorter, while the warty skin is smoother, and down the centre of the back runs a thin

yellow line. It progresses by walking or running, instead of hopping, and is found mostly in sandy situations, drier than those affected by the common toad. The male has an internal vocal sac which distends the throat when the natterjack utters his rattling note, suggestive of the call of the nightjar. It occurs in N. and W. Europe, including Great Britain. See *Toad*.

**Nattier, JEAN MARC** (1685–1766). French painter. He was born in Paris, and secured the patronage



J. M. Nattier,  
French painter  
After Voisiot

of Louis XIV, being at first employed on drawings for the engravings of Rubens' pictures. The last forty years of his life were devoted to the painting of portraits, often of Court ladies.

**Natural.** Musical sign ♮ used to neutralise the effect of a sharp or flat. It probably derives its name from the key of C, which is known as the natural key, and had no sharps or flats. Its shape comes from the letter h (h) the old German name for B ♯ (B ♯ being called B). See *Flat*; *Sharp*.

**Natural Gas.** Gas which occurs naturally in the earth's crust. Inorganic gases such as sulphur dioxide, chlorine, carbon dioxide, nitrogen, hydrogen, etc., are generally associated with volcanic activity. Organic gases include marsh gas, firedamp, and the gases associated with petroleum. The natural gas from petroleum reservoirs is the basis of a large industry: approximately 4 billion cubic feet were marketed in the U.S.A. during 1945. It is usually composed of paraffin hydrocarbons from methane to octane and even heavier. Many of these condense out and are removed from the gas. Inorganic gases are also sometimes associated with petroleum. Hydrogen sulphide is quite common; occasionally there is a high percentage of nitrogen with some helium; sometimes, as in Mexico, the gas is used commercially as a source of carbon dioxide.

**Natural History.** Term which in its original meaning was used for the study of all natural objects. As such, the study of natural history included that of zoology, botany, geology, and allied sciences. The term has gradually become less broad in its meaning, until now it is confined to zoology and botany.

Natural history is used for the more popular side of the subjects, as distinct from their scientific study. See *Botany*; *Zoology*.

**Natural History Museum.** Collection of objects of natural history. The museum of this name in Cromwell Road, S. Kensington, London, S.W.7, is part of the British Museum. It was opened in 1881 to accommodate the natural history collection in the British Museum, and so relieve the congestion there, and during 1881–85 the exhibits were removed to their new home. There are departments of zoology, entomology, botany, and mineralogy. During the Second Great War it was considerably damaged by bombs, two galleries being burnt out. See *British Museum illus.*

**Naturalisation.** Term used in law to denote the process whereby an alien becomes a subject. In almost every civilized country there are now naturalisation laws. In the United Kingdom it was, until 1870, necessary for an alien who desired to become a naturalised British subject to procure the passing of an Act of parliament in his favour.

Naturalisation in the United Kingdom is governed by the British Nationality and Status of Aliens Act, 1914, as amended by later Acts. By these statutes the home secretary may grant a certificate of naturalisation to any alien who applies for one, if the applicant satisfies the home secretary (a) that he has resided in British dominions for five years at least, of which the last year before the application must be in the United Kingdom, and four years within the preceding eight years in any part of the British dominions; or has been in the service of the crown for at least five years within the preceding eight years; (b) that he is of good character and has an adequate knowledge of the English language; (c) that he intends to reside in the British dominions or to continue in the service of the crown. The certificate has no effect until the applicant has taken the oath of allegiance. In special cases, the home secretary may grant a certificate, although the four years' residence or five years' service has not been within the preceding eight years.

A naturalised alien is in the same position as a natural born subject. Alien infant children become naturalised by their father's naturalisation, if included in the father's application; but on attaining 21 may make a declaration renouncing British nationality.



When an alien is naturalised his wife does not become a British subject unless she makes a declaration within 12 months.

If the home secretary is satisfied that a naturalisation certificate has been obtained by false representation, or fraud, or material concealment, or that the naturalised person has shown himself disloyal by act or speech, he may cancel the certificate. He has also power to cancel on certain other grounds. The Governor of any British possession may issue local naturalisation certificates and if he obtains the approval of the Home Secretary U.K. naturalisation certificates as well.

The British Nationality Act, 1948, based on agreement between representatives of the British Commonwealth, clarified the national status of U.K. citizens within the Commonwealth. It laid down that, as agreed by all Commonwealth countries except Eire, persons recognized as British in any part of the Commonwealth should be so recognized throughout it; there should be a single citizenship, based on existing U.K. law, for the U.K. and the colonies; a woman citizen of the U.K. marrying an alien should no longer automatically lose her British nationality, nor an alien woman marrying a U.K. citizen automatically acquire her husband's nationality.

In the U.S.A. an alien can only be naturalised two years after declaration on oath before a court of his intention of being naturalised, and after five years' residence in the country. He must specifically renounce allegiance to every foreign power, including that to which he formerly belonged, and must also renounce any title of nobility. *See Alien*; *British Subject*.

**Naturalism.** In philosophy, the theory that denies the existence or intervention of any being or principle outside, and higher than, nature, and interprets the whole of experience in terms of natural science. It thus resembles materialism, which is chiefly concerned with the essential nature of things, while naturalism deals with the course and causes of events.

In literature and the arts, naturalism is, strictly speaking, synonymous with realism, *i.e.* a close imitation of reality, but came latterly to imply insistence on the more sordid and repellent aspects of life and nature, owing to the tendency of many naturalistic artists and writers, such as Zola, to emphasise in this manner their antipathy to idealisation.

In painting, the name was originally given to the work of a group of Neapolitans, who claimed to found their art on direct observation of nature, and who had dispensed with Academy teaching. Their influence was transmitted through Ribera to Spain, where it found a nobler expression in the naturalism of Velazquez.

**Natural Philosophy.** Term originally meaning the study of the material world as a whole, now usually called natural science. In a restricted sense the term, which in general use tends to become obsolete owing to the sharper distinction now drawn between philosophy and science, is retained in the sense of physics (*q.v.*) at Oxford, Cambridge, Dublin, and the Scottish universities.

**Natural Region.** Term used in geography to indicate a unit area of a definite type. The Mediterranean region is a unit area with a definite character and, consequently with a definite type of vegetation; and the application to it of the term "natural region" implies first, that it may be inferred that similar physical and climatic conditions would necessarily produce a similar natural flora, and secondly, that the control of human development exercised by an area with its specific limitations will be exerted similarly wherever regions of this type occur. *See Geography*.

**Natural Selection.** Theory of evolution first propounded by Charles Darwin, which forms the basis of his book *The Origin of Species*, 1859. Plants and animals are so produced that there is not room for them all on the earth, and in the struggle for existence only a few survive. According to Darwin, the survivors are those that are best fitted for the struggle through some special variation in structure. This is developed and inherited through many generations, and emphasized and increased until there is established a new species with an advantage over others. Natural selection teaches that the differences are usually small and fortuitous; thus a species has a difference which makes it better suited to its life than its fellows. If this is inherited, its descendants will be more likely to survive.

Darwin was first led to propound his theory by studying bird life during the voyage of the *Beagle*. He noticed that the birds of certain islands showed marked differences in structure from those of the same species on the mainland. This suggested that the birds were in the process of evolving

into different species. Similarly, he noticed that, among the birds on the mainland, different species of the same family in adjacent districts gradually merged into each other, as though they had been permanently altered by their environment.

The theory of natural selection, which was simultaneously propounded by Alfred Russel Wallace, aroused the enmity of churchmen, who regarded the doctrine as a dangerous attack upon the Biblical account of creation, especially when Darwin later extended it to explain the origin of man. Although natural selection is often called the "survival of the fittest," it is worth noting that this phrase was not used by Darwin, but coined later by Herbert Spencer. *See Evolution*.

**Natural Theology.** Branch of theology concerned with proofs of the existence and nature of God, apart from revelation. It is claimed that if God had not revealed Himself to man through the Bible or in any other way, we should still have sufficient reason, if not proof, for believing in His existence.

The ontological argument is based on Plato's theory of universal and necessary ideas, developed by S. Anselm and advocated in a rather different sense by Descartes. All men, it is argued, possess or can possess the notion of a perfect being. But perfection implies existence, for a non-existent being lacks something, *viz.* existence, and is therefore not perfect. Therefore a perfect Being must exist. The validity of this argument was criticised by Kant, who argued that we can conceive perfection either as existent or non-existent.

The cosmological argument views the universe as an effect, and maintains that its existence necessarily implies a cause, *i.e.* God. Or, expressing it differently, the universe exists contingently and dependently; and this implies the existence of the absolute and independent. This argument assumes the contingency of the universe, but fails to prove it.

The teleological argument may be stated thus: The more we study the world of phenomena, the more we see how everything tends to some end and serves some purpose. Hence we have evidence on all hands that phenomena are the result of design on the part of an intelligent designer, *i.e.* God. The *Bridgewater Treatises* and other more or less scientific works were written in support of this thesis, but the discovery of the laws of

evolution has thrown a very different light on the subject.

Another argument points out that mankind gives a general consent to the idea of a God, and urges that what is universally believed cannot be without foundation. But a general notion may conceivably be erroneous. Another argument is based upon design in history, and urges that the whole course of events points to a controlling influence from without.

It has also been urged—notably by Kant—that the moral nature of man points to a categorical imperative external to himself, whose authority he is unable to ignore. Man feels that he ought to do this and ought not to do that—irrespective of his personal wishes or immediate advantage. *See* Deism; God; Theism; Theology. *Consult* Natural Theology, W. Paley, 1802; Natural Religion, F. Max Müller, 1889; Theism and Humanism (G. How Lectures), A. J. Balfour, 1915.

**Nature.** British scientific periodical. It was founded Nov. 4, 1869, by Sir Norman Lockyer, and is published weekly by Macmillan & Co., Ltd. It presents a regular record of scientific progress, prints regularly letters to the editor which incorporate brief accounts of current research by the investigators concerned, and reviews scientific books, scientific papers, etc.

**Nature Study.** The study of natural history, especially by children in primary schools, where it is introduced to stimulate interest in living things and develop powers of observation. It was in the early 20th century the basis of virtually all biological teaching in elementary schools; at first restricted to observation of plant life and drawing of plant forms, it was broadened to include animal life, growing plants in classrooms, gardening, keeping fowls or rabbits, etc. Direct observation of nature is often supplemented by classroom experiments and demonstrations, and may be correlated with art and craft teaching, the keeping of records, rambles, and school camps. Properly taught, nature study may help considerably to develop the child's sense of wonder and beauty. Nature study under various names has a place in the activities of boy scouts and girl guides. In secondary schools it may be extended to biology.

**Nature-Worship.** Ritual expression of reverence for those phenomena of the visible universe which are regarded as capable

of bringing to man good or ill. Students of primeval man assume a stage in his history when he thought of individual objects in nature, especially those displaying movement or action, as animated by powers akin to his own. The action of some of them could always be relied upon, and aroused no anxiety. That of others could not be predicted, and hence there emerged a more or less conscious perception of the supernatural, and the need for establishing relations therewith. Some phenomena became the object of approach or avoidance by processes usually classed as magical; experience showed others to be stronger than man, and to call for propitiation.

The conception of natural objects as animated beings akin to man passed into that of personalised objects or powers, amenable to control or appeal. Out of this arose the idea of supernatural beings dominating the phenomena which were held to be their abode. So, too, there emerged from the animistic conception of human ghosts and of natural objects animated by spirits—human or non-human—the notion of a spirit-haunted world on the one hand, and of separate souls on the other.

Primitive thought deals with individual things; man comes into relationship, intellectual or emotional, with this particular rock, or that particular stream. The formulation of general ideas demands a mental effort which some unprogressive peoples apparently never attained. It was only after prolonged reflection that man reached the abstract notion of the elements, and became capable of thinking of earth, water, fire, or sky as a whole. Nature-worship was at first, if not always, the ritual approach to a multitude of nature-spirits or nature-gods.

In a remote past worship was offered to animals and plants, because on their goodwill seemed to depend the food-supply. Indeed domestication is best explained as an unexpected outcome of their segregation as objects of sanctity under the guise of tribal totems. After men became herdsmen and tillers they realized the need for establishing relations with the powers on whose goodwill—rather than on that of the herds and crops themselves—their livelihood was seen to depend. Animal-worship and tree-worship accordingly passed

into that of the phenomena behind them, including rivers and wells, mountains and rocks, storm and rain, thunder and fire, moon and sun. *Consult* Introduction to the History of Religion, F. B. Jevons, 3rd ed. 1904; The Golden Bough, J. G. Frazer, 3rd ed. 1907-15.

**Naucratis.** Ancient Greek colony in Lower Egypt. Situated near the modern Nebira on the Canopic arm of the Nile, it was founded by traders from Miletus in the 7th century B.C. Under Aahmes II, c. 564 B.C., it monopolised Greek trade in Egypt. The site was identified by Petrie in 1885 and excavated by him, further work being done by Hogarth in 1899.

**Naugatuck.** Borough of Connecticut, U.S.A., in New Haven co. It stands on the Naugatuck river, a source of water-power, 15 m. N.W. of New Haven by rly. Goodyear, who discovered the rubber vulcanisation process, established a factory here in 1843, and it has one of the world's largest rubber regeneration plants. Leading industry is rubber products, one plant making 100,000 pairs of footwear daily. Other manufactures include chemicals, plastics, aeroplane instruments, iron castings, and glass. Settled in 1702, the town was incorporated as a borough in 1893. Pop. 15,388 (approx. one-third being foreign-born).

**Naughton and Gold.** British music hall comedians. Charles John Naughton was born in Glasgow, Dec. 15, 1888, and James McGonigal (who adopted the name of Gold) was born April 21, 1886. Natural comedians and notorious practical jokers off the stage, they played in pantomime and scored a great success when they appeared with the Crazy Gang in a series of burlesque turns from 1931.

**Nauheim, BAD.** Town and watering-place of Germany. It is in Hesse, 16 m. N.E. of Frankfurt-o-M. For long it was Germany's outstanding spa for cardiac disorders, having saline waters rich in iron and carbon dioxide. Gout, rheumatism, and many skin ailments have also been treated here. The sources were used in Roman times, but the spa was inaugurated only in 1835. After the end of the Second Great War it came within the U.S. zone of occupation. Pop. (pre-war) 9,390. *From* Now-hime.

**Naumburg.** Name of several German towns. The most important is Naumburg an der Saale,

in the *Land* of Saxony-Anhalt, which after the Second Great War came in the Russian zone of occupation. In the main a medieval town, it was in the early 20th century the home of various industries, including textiles, toys, and paper manufacture. The Protestant cathedral, dating from the 12th and 13th centuries, is noteworthy for its four towers and for the 12 life-size statues of the founders. Other interesting buildings are the churches of S. Wenceslaus and S. Mary. The town was the seat of a bishopric from 968, and from the 13th to the 15th century a member of the Hanseatic League. In 1564 it passed to the electors of Saxony, and it remained Saxon until handed over to Prussia in 1815. Pop. (pre-war) 31,000.

Two other Naumburgs are in Silesia: Naumburg an der Bober (Pol. Nowogród Bobrzański), near Liegnitz, has iron sulphide mines; and Naumburg am Queis (Pol. Nowogrodziec) makes pottery.

**Naupaktos** (mod. Lepanto). City of ancient Greece, in the county of the Locris Ozolae, on the N. coast of the Corinthian Gulf. It had a good harbour, now almost entirely silted up. The Athenians settled Naupaktos with Messenians deported after the war with Sparta in 455 B.C., and used it as a naval base in the Peloponnesian war.

**Nauplia** or **NAVLIA**. Town and port of Greece. Anciently the

is 20 m. across its entrance and 30 m. long. Spezzia is the chief of numerous islands. The Xeria river on which Argos stands flows into it.

**Nauru**. Island of the Pacific. Its area is 5,263 acres and it is 400 miles from the Marshall Islands. Its importance is due to its rich deposits of phosphates. The island was annexed by Germany in 1888 but, having been taken by the Australian forces in 1914, was later governed by Great Britain under the League of Nations. On Dec. 27, 1940, Nauru was heavily shelled by a German raider, the phosphate plant being badly damaged. After the entry of Japan into the war, the island was bombed by Japanese aircraft and eventually occupied by Japanese troops on Aug. 25, 1942. U.S. aircraft and warships attacked Nauru during 1943-44, on several occasions. On Sept. 14, 1945, the Japanese troops surrendered to Australian authorities on board an Australian ship. Pop. 2,321.

**Nausea**. Medical term, derived from the Greek word for sea sickness. It describes the sensation of impending vomiting. It is a symptom of many diseases. *See* Vomiting.

**Nausicaa**. Ancient Greek heroine mentioned in the *Odyssey*, 6. She was the daughter of Alcinoos, king of the Phaeacians, and the shipwrecked Odysseus found her playing at ball with her maidens on the shore. Pitying his plight, she conducted him to her father, by whom he was hospitably entertained. *See* *Odyssey*.

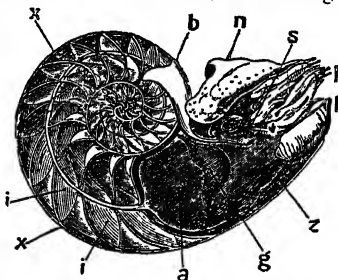
**Nautch Girl** (Hind. *nāch*, dance). Indian dancer. These girls are carefully chosen for their beauty when young to be priestesses to the god Rondzu, the fifth daughter being supposed to be specially suitable. Apart from their dancing in the temples, they are hired to amuse guests by dancing and singing. The dance consists of posturing and slow steps, each part of the body being made to express emotion. The dancers' costumes are very rich, often covered with jewels. *See* Dancing.

**Nautical Almanac**. Publication containing tables and astronomical data for the use of seamen.

The best known is the British Nautical Almanac, while others are published by the U.S.A. and France. The British Nautical Almanac was first issued in 1767 under the superintendence of Maskelyne, then astronomer royal, and from 1832 by the Admiralty. It is usually issued two or three years in advance for the sake of mariners. The offices are at the Royal Greenwich Observatory, Hurstmonceux, Sussex.

**Nautiloidea** (Gr. *nautilus*, sailor; *eidos*, form). Fossil Cephalopoda. Remains of nautiloidea are found in Cambrian to present-day deposits. They were very similar in form to the existing nautilus (*v.i.*), the only remaining living genus of the order. *See* Cephalopoda.

**Nautilus**. Genus of cephalopodous (head-footed) molluscs, related to the cuttles, but having



**Nautilus**. Sectional diagram of interior of shell of pearly nautilus. a. Mantle; b. Dorsal fold; g. Muscle attaching body to shell; i. Chambers of shell; k. Funnel; n. Hood; p. Fringed lobes surrounding mouth; s. Eye; x. Shell and septa; z. Newest chamber

a spiral chambered shell. It is distinguished from all other cephalopods by having four gills instead of two. It lacks the tentacles of the cuttles, but has fringed lobes round the mouth. The diagram shows the coiled shell in section, the animal filling only the newest or outer chamber, the remainder containing gas. Thus the animal is buoyant in water and can move easily, crawling on its foot rather like a snail, and feeding upon other molluscs and small crustaceans. It is also able to swim like the cuttles in a series of backward jerks by expelling water from its siphon.

There are probably only three living species of nautilus, of which the pearly nautilus is the best known. It gains its name from the beautiful, white, pearly shells, valued by collectors, but in the living state the exterior of the shell is dull and porcellaneous, the colour pale brown with broad bands of darker brown. Internally the shell is remarkable for its



**Nautch Girl**. Punjabi dancing girls from Delhi, with their musicians

port of Argos, 6 m. N.W., it lies on the N.E. side of the gulf of the same name, and has a fair shipping trade. In the Middle Ages it belonged to Venice. It passed to the Turks, from whom it was taken by the Greeks in 1822, and was their capital until 1834. The rly. from Corinth runs to the head of the gulf. Pop. est. 8,000.

**Nauplia**, **GULF OF**. Arm of the Aegean Sea, Greece. It lies between two peninsulas of the Morea,

division by septa or thin walls into a series of chambers which mark stages in the growth of the animal. The nautilus occupies the outermost chamber only. The others are united by a slender tube or siphuncle which extends to the apex of the shell. On some parts of the coast of India the flesh is salted and dried for food.

The nautilus is of interest to the palaeontologist as being a survival of a large group of fossils, the Ammonites. It is found only in the Indo-Pacific ocean at depths below 10 fathoms, though empty shells are washed ashore in abundance. See Cephalopoda.

**Navaho** or **NAVAJO**. N. American Indian tribe. They live mostly on reservations in New Mexico and Arizona. Of Athapascan stock, they number about



Navaho. Squaw (above) and man from Arizona

28,500. Their arid pasture-lands, averaging 6,000 ft. in alt., have been improved by irrigation, and are under partial cultivation. They are skilful weavers. Their belief in a nature-goddess, "she-who-grows young," puts womanhood on a high plane. Consult The Navaho, Kluckhorn and Leighton, 1947.

**Naval Architects**, INSTITUTION OF. British technical society. Founded in 1860, it holds meetings for the discussion of ship design and general questions of interest to members. Transactions are published quarterly. Offices: 10, Upper Belgrave St., London, S.W.1.

**Naval Aviation**. Title of the aviation branch of the Royal Navy. It replaced the title, Fleet Air Arm (q.v.) on Sept. 9, 1946.

**Naval Brigade**. Name for a body of sailors landed from a fleet to fight on shore. Famous brigades of this kind were the naval brigades of the Shannon and Powerful, which helped to defend Ladysmith during the South African War, and the mixed naval and marine brigades who were sent to assist in the defence of Antwerp in Oct., 1914. (See Antwerp.) In the Second Great War the functions of naval

brigades were performed by Royal Marine commandos.

**Naval Cadet**. Name given to boys training for commissions in the Royal Navy. Candidates, who had to be 12½ years old, were formerly nominated by the first lord of the Admiralty, and all training was carried out in warships at sea until the early 19th century. With the introduction of steam and the establishment of shore training establishments there was considerable distinction between cadets entering for the executive and engineering branches. In 1903 the system of nomination was abolished, as was the distinction between branches. The first two years of training were spent at Osborne and the next two years at Dartmouth, but in 1921 Osborne was closed and the cadets transferred to Dartmouth.

The first lord selected candidates from a committee's recommendations, subject to their passing a qualifying examination. At Dartmouth the education was on public school lines. After passing out cadets joined ships of the Mediterranean or Atlantic fleets, becoming midshipmen after eight months afloat.

In March, 1948, the Admiralty introduced a new system. Candidates just over 16 years old, who come from all types of schools, sit for an examination held three times a year. Entry into the Royal Naval College, Dartmouth, is free, as are tuition and maintenance. Parents pay for cadets' uniforms and personal expenses according to their means. There is no charge upon parents whose income is less than £300 a year. Cadets spend six months at Dartmouth, followed by eight months on a training cruiser before going to the fleet as midshipmen. Approx. 120 cadets enter Dartmouth each year.

**Naval Discipline Act**. Act codifying the immemorial customs and the statutory provisions governing the maintenance of discipline in the Royal Navy, formally described as 29 and 30 Vict. C. 109. It was amended by the Naval Discipline Act of 1922 (12 and 13 Geo. 5. C. 37). See Royal Navy.

**Naval Division**, ROYAL. For details of this body, see under Royal Naval Division.

**Naval Prize Bill**. British Act of parliament which governs the computation and distribution of naval prize money. The largest amount of prize money ever awarded for a single action was the £520,000 distributed to the frigates Active and Favourite for their

capture of the Spanish vessel Hermione in 1752. After the First Great War the Naval Prize Bill was amended: instead of the prize money being awarded to ships' crews directly concerned in the action, all prize money was paid into a common fund and shared among all personnel of the navy according to rank. The total sum distributed was £9,500,000. The bill was further amended after the Second Great War to include within its scope personnel of Coastal Command of the R.A.F. Prize money of the Second Great War totalled some £12,000,000, but distribution, which averaged £25 per man, did not begin until some years later. This was the last distribution of the traditional bounty. See Prize Court; Prize Money.

**Naval Reserve**, ROYAL. Details of this body, and of the Royal Naval Volunteer Reserve, will be found under Royal Naval Reserve.

**Navan**. Market town and urban dist. of co. Meath, Eire. Standing where the Blackwater falls into the Boyne, it is a junction on the Eire state rlys., 30 m. from Dublin. A market town, surrounded by rich agricultural land, it is also an industrial centre, manufacturing carpets, woollen goods, and agricultural implements. Tara, ancient residence of Irish kings, is 6 m. S.E. Until 1800 Navan sent two members to the Irish parliament; since 1935 Dáil representation has been merged in the cos. Meath and Westmeath. Market day, Wed. Pop. 4,123.

**Navarino**, BATTLE OF. Destruction of a Turkish fleet by the British and their allies, Oct. 20, 1827. It was the decisive battle of the Greek War of Liberation. Egyptian forces, under Ibrahim Pasha, had landed in the Morea in 1825, while the Greek fleet had lingered too long in the Cyclades. Ibrahim inflicted a terrible military defeat upon the Greeks, and established himself at Navarino, whither a combined Egyptian and Turkish fleet transported reinforcements from Crete. A little later a large fleet arrived, bringing fresh strength from Egypt. Meanwhile an allied squadron proceeded to Navarino, Oct. 20, 1827.

It was hoped that the Turks would enter into negotiations, but the situation had become so tense that when a British boat was fired upon the whole line burst into flame, and a furious fight raged at the closest quarters. Probably no battle had ever been more speedily decisive. The next morning Codrington wrote: "Out of a

fleet composed of 81 men-of-war, only one frigate and 15 smaller vessels are in a state ever to put to sea again.' The battle was tactically complete, and strategically decisive. Navarino, now called Pylos, is a seaport in the Morea, with a fine harbour. See Pylos.

**Navarre.** Former kingdom of S.W. Europe. Its territory lay on the western borders of France and Spain at the angle of the Bay of Biscay; and it included the W. part of the Pyrenees with a small part of Gascony and a varying area in Spain. The population was mainly Basque. When the Saracens conquered most of Spain in the 8th century, the Gothic Christian nobles held their ground in the northern mountains.

The strongest kingdom thus established in the early years of the 11th century was that of Sancho the Great, king of Navarre, who died in 1035. A hundred years later, under Alphonso I, Navarre seemed likely to absorb the Christian monarchies. In 1234, however, the crown passed to Theobald, count of Champagne, a feudatory of France, and in 1284 Navarre became an appanage of the French crown by the marriage of King Philip IV with its heiress. On the death of Louis X, 1316, Navarre passed to his daughter and then to her son Charles the Bad, being again parted from the French crown, which passed by male succession only.

In the 15th century the crowns of Navarre and Aragon were united by the marriage of Blanche of Navarre to John of Aragon; on his death, in 1479, Aragon went to Ferdinand, his son by a second marriage, while Navarre was claimed by Catherine of Foix, his grand-daughter by the first marriage. Catherine married the French Constable, Jean d'Albret, and retained French Navarre with the royal title, while Ferdinand annexed Spanish Navarre. Her daughter, Jeanne d'Albret, married Antony of Bourbon, and was the mother of King Henry of Navarre, who succeeded to the French throne as Henry IV in 1589—the first of the Bourbon kings of France. In 1620, eleven years after his death, French Navarre ceased to have the status of a kingdom.

**Navarre, OR NAVARRA.** Frontier prov. of N. Spain, bounded N. by France and sloping S. to the Ebro. Traversed by the Pyrenees and the Cantabrian Mts., it is almost wholly mountainous, reaching in Mt. Adi an alt. of 4,930 ft. Excepting the Bidassoa, which

flows N. to the Bay of Biscay, the rivers run S., falling into the Ebro. On the hills, pine, beech, oak, and chestnut forests abound; the valleys are fertile, yielding cereals, flax, wine, and oil. Sheep and cattle are reared on the grassy uplands, and game and freshwater fish are abundant. The chief exports are livestock, wine, oil, wool, leather, and paper. The principal towns are Pamplona, the capital, and Tudela. Its area is 4,056 sq. m. Pop. 383,359.

**Navarrete, BATTLE OF.** Fought between the English under the Black Prince and the Spaniards, April 3, 1367.

The Black Prince entered Spain in the interests of Pedro the Cruel, king of Castile, with some 30,000 English, French, and mercenary troops. The Spaniards, under Henry of Trastámara, joined battle at Navarrete, a village near the French frontier. The English were in three lines, the first under Sir John Chandos, and they fought dismounted with archers on their flanks. The first of the Spanish lines, also dismounted, was under Du Guesclin. At first the English were forced back, but their archers came to the rescue, the prince hurried up his reserves, and soon the Spaniards were in flight, pursued by the English. The battle is described by Froissart.

**Nave** (Lat. *navis*, a ship). In ecclesiastical architecture, the largest, i.e. the middle, section of a church divided by piers or columns into three parts. As such the nave includes the choir and the height of the clerestory, but when the choir is shut off from the body of the church, it is commonly excluded from the term nave. See Basilica; Cathedral; Choir.

**Navel.** Scar in the centre of the abdomen, which marks the spot where the umbilical cord (*g.v.*) has been severed at birth, and, in human beings, tied.

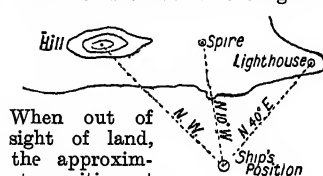
**Navicert.** Permit issued in time of war by a blockading power to allow legitimate cargoes to pass through contraband-control areas. Introduced by the British in 1915, it was, in effect, a commercial passport for goods, and was issued by British representatives before such goods left a neutral port of shipment for a neutral destination. Firms requiring navicerts inquired from the British embassy or legation if the proposed shipments would be regarded as purely neutral. If the British representative knew the consignee to be trustworthy, and the goods as such did not require a British

export licence, a navicert was issued. Thus delay and inconvenience in passing through contraband control were reduced to a minimum. The first navicerts of the Second Great War were issued on Nov. 22, 1939, and were made available between the U.S.A. and certain neutral countries near Germany. Navicerts were discontinued from Sept. 30, 1946.

**Navigation.** Art of directing a ship or aircraft from one position to another and of determining its position at any moment. In marine navigation a chart and a mariner's compass are required. Before the invention of the mariner's compass, mariners were compelled to keep in sight of land.

In order to determine the course between two positions, charts have been drawn of different portions of the globe. These charts have the latitude and longitude and the true or magnetic north marked on them. The present position of a vessel and the one it is desired to reach are plotted on the chart, which thus gives the course to be made good. The direction of this course is read off from the points of the compass pointed on the chart. To discover from the chart the course to be steered in order to arrive at any desired position, the mariner must know the position of his vessel. In sight of land this is easily found by taking compass bearings, i.e. the direction by compass of prominent objects such as a lighthouse, or church spire. The position of these objects is shown on the chart. Three or more objects are selected, so that the compass bearings cut one another at a fairly large angle when shown on the chart. Through each object on the chart is then drawn the observed compass bearing, and the point where these lines cut is the position of the ship at the time of observation.

For example, a mariner observes that the summit of a hill bears N.W., a church spire N. 10° W., and a lighthouse N. 40° E. The ship's position is where the three lines cut as shown in the figure:

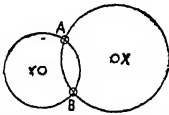


When out of sight of land, the approximate position at any time can be found by calculating the number of nautical miles the vessel has travelled along the course from the last-known posi-



tion and then plotting this distance on the chart. Such an approximate position is called dead reckoning (D.R.). If the effects of currents and tidal streams, wind, weather, and other factors are taken into account, the position is called an estimated position (E.P.).

The exact position of a vessel when out of sight of land is obtained by observation of the heavenly bodies. Observations of stars or planets give the most accurate results, and are normally made during the morning and evening twilight. Several are usually visible at the same moment, but observation is difficult for a novice. On large aircraft, such observations are made by the navigator through a transparent cover fitted to the roof of the fuselage.

A sextant and a chronometer showing Greenwich time, or a known error on Greenwich time, are required for taking an observation. The altitude of the heavenly body is measured by the sextant and the time is noted at the instant the altitude is observed. The observer obtains the actual distance of his position from the point where, at the instant of observation, an imaginary line joining the centre of the earth and the heavenly body cuts the earth's surface. This imaginary point on the earth's surface is known as the geographical position of the heavenly body. The observer then knows that he is on a circle whose centre is the geographical position of the body observed, and whose arcual radius is the observed altitude. Another circle can be drawn for another star observed simultaneously, or for the same body after an interval of time. The ship's position is then at one of the points of intersection of the circles. 

Navigation. Diagram showing the geographical positions *X, Y*, of two heavenly bodies, and *A, B*, the points of intersection of circles giving the position of a ship.

In practice it is not usually possible to draw the circles owing to the excessive length of the radii, so the following method is adopted. The altitude is observed at any moment and the Greenwich time noted. The D.R. position is calculated at this moment. Supposing the ship to be at the D.R. position, the altitude of the heavenly body observed can be calculated trigonometrically, as can also the direction, i.e. the bearing by compass.

Thus three factors are known: (a) The observed altitude, which must be correct, as the observer has measured it with his sextant. (b) The calculated altitude which is only correct provided the ship is in the D.R. position. (c) The direction of the heavenly body. The D.R. position is put on the chart and through this position the direction of the heavenly body is drawn. The difference between the observed and calculated altitudes is noted, and from this on the chart the true position is obtained, drawing what are known as position lines. This method is that commonly used by mariners.

Navigating in the air is in general similar to that of navigating a ship, but is influenced by a number of differing conditions. Air speeds are much higher than sea speeds, and great rapidity and accuracy are required. The air navigator does not have to consider dangers comparable with rocks and shoals; consequently the seaman's need for accuracy of position is not so important for an aircraft; on the other hand, a greater degree of accuracy of time is essential in the air. The effect of wind on an aircraft is similar to that of tides and currents on a ship, both producing angles of drift; but in the case of aircraft a much greater displacement off course is effected in a given time. The principal instruments used in aircraft navigation are: compass, drift indicator, directional gyro, and calculator for the vector triangle—these ensure the desired course being maintained; air speed computer, air speed indicator, sight for observation of ground speed, which, used in conjunction with the altimeter and height computer, enable the height of the ground above sea level to be computed from the map—these instruments determine distance run; a compass for observation of bearings or fixing the direction of objects the position of which is known and recognizable from the map, altimeter for determining the altitude of the aircraft above ground level, sextant for observing the sun, moon, and stars, so fixing geographical position; a watch to give the exact G.M.T. of the astronomical and observational tables—these fix the position of the aircraft. Both ships and aircraft use radio direction-finding for establishing position, but such instruments require the cooperation of land or shore stations. Position can also be established by radar (*q.v.*), which is playing an

increasing part in modern navigation. Radio and radar aids have the great advantage of being available throughout the day and night and are unaffected by weather conditions.

Navigation of land vehicles, which was a feature of the mechanised operations in the desert in the Second Great War, is generally done by means of map and compass. It is much more simple than air or sea navigation, as there are usually recognizable landmarks to assist in fixing position. *Consult*: The Complete Observer's Astro-Navigation, F. Chichester, 1944; The Theory of Navigation, W. Alexander, 1944; Elementary Marine Navigation, S. Walling and J. Hill, 1944; A History of Air Navigation, A. Hughes, 1946; Admiralty Manual of Navigation, published annually.

**Navigation Acts.** Term applied to a number of enactments designed to regulate shipping to the advantage of British ships. Such legislation is to be found in the reigns of Richard II, Henry VII, and Elizabeth, but Cromwell's Navigation Act of 1651 was the first comprehensive enactment. This Act, directed against the very profitable Dutch carrying trade, refused admission into English ports of all goods not carried in English ships, or in the ships of the country of origin, while English goods could be exported only in English vessels. It benefited English shipping, but it raised the price of imports and caused a war with the Dutch. Enactments in 1660 and 1663 forbade colonial trade to any but English ships, a restriction destined to be a great source of trouble with the American colonies. The Acts were completely repealed in 1849, and in 1854 even the coastwise trade was thrown open.

**Navigators' Islands.** Original name of the islands in the Pacific Ocean now known as the Samoan Group (*q.v.*). They were so named by their discoverer, Louis Antoine de Bougainville, 1768.

**Naville, ÉDOUARD HENRI** (1844-1926). Swiss Egyptologist. Born at Geneva, June 14, 1844, he studied in Geneva, London, Paris, and Berlin. In 1869 he proceeded to Egypt, where from 1883 onwards he carried out important excavations, partly on behalf of the Egypt Exploration Fund. They included the store-city of Pithom, Goshen, the city of Onias, and the temple of Deir-el-Bahri. His translated works include The Old Egyptian Faith, 1909; Archæ-

ology of the O.T.; Was the O.T. written in Hebrew? 1913. He died Oct. 17, 1926.

**Navsari.** Dist. and town of Bombay, India. The dist. is crossed by the Tapti river. Fruits, sugar, grain, and cotton are produced. The town, which stands on the left bank of the Puma, 149 m. N. of Bombay, can be reached by small ships. The Zoroastrian priesthood of the Parsees receive their initiation and training at Navsari, which has been a centre of the Parsees since their arrival in India. Area, 1,811 sq. m. Pop., dist., 466,000; town, 45,000.

**Navy.** Name applied to a labourer employed on road making or other digging operations. The word is an abbreviation of navigator, the term applied in the late 18th and early 19th centuries to a labourer employed in digging canals. It was later applied to unskilled labourers on roads and railways. A steam navy is a machine for digging. See Excavator.

**Navy** (Lat. *navis*, ship). Term used for the collection of men and ships that form the force a country maintains for fighting at sea. Originally it described all a nation's vessels, whether used for trade or warfare. At the present day, practically every country which has a seaboard has a navy, although a number of them are of little value as fighting units.

The first navy of note was that of Athens, although as early as 664 B.C. both Corinth and Corcyra had fleets of fighting ships, as a little later had nearly all the little states of Greece. The Persians and Egyptians had fleets about this time, and the battle of Salamis was fought in 480 B.C. between the Persians and a navy composed of ships supplied by Athens and her allies. The Athenian navy, which owed much to Themistocles, appears to have been well organized, with an efficient and trained personnel, and its services to Athens and her allies during the Peloponnesian War gave the world its first great lesson in the value of sea power. Unlike the European navies of the 16th century, it was a collection of vessels, the long ships, maintained by the state solely for fighting purposes, not one assembled hastily from various ports and owners to meet an emergency.

Rome and Carthage had each a navy of considerable size, and one was established for the eastern empire. Much of their work consisted in the suppression of pirates, who then, as later, swarmed in the Mediterranean. Partly for the

same reason navies were maintained by Venice, Genoa, and other trading states. The later navies of modern European powers arose from the few vessels maintained by the sovereigns. Spain had, early, a considerable navy, while England and the Dutch republic soon made reputations on the sea. Scotland and France were among other countries that possessed small royal navies in the 15th century, as did Portugal and Denmark. Somewhat later, Frederick William laid the foundation of the navy of Prussia, and Peter the Great rendered a like service to Russia.

#### From Merchantman to Warship

There was in early navies no sharp distinction between a warship and a merchantman. The merchantman was, of necessity, always ready to fight, and the navy was simply a collection of these, after extra men and arms had been provided, reinforced perhaps by a few vessels built more especially for fighting purposes. In the 18th century navies came to consist of ships built solely for fighting, and it was such that fought the battles of the Napoleonic period.

For many years after Trafalgar there was little change in the essentials of the world's navies, but in the second half of the 19th century began the evolution of the modern navy and of specialised vessels.

As regards navies in general before the First Great War, the tendency was to look at them from the point of view of relative strength. The British navy had long been unquestionably stronger than any other taken singly, but its directors were forced to consider the possibility of a combination against it. Thus was evolved the two-power standard, i.e. the theory that the British navy should be equal to the next two combined. The two-power standard was maintained against France and Russia, but the rapid growth of the German navy imperilled it.

After the First Great War the principal naval powers made plans for maintaining greatly expanded fleets, and the end of hostilities had left Great Britain and the U.S.A. with large numbers of new warships of all types laid down during the war. Eventually, however, a series of international treaties, of which the Washington agreement of 1922 was the first, restricted building, particularly in heavy categories, such as battle-ships and cruisers. These treaties gave the U.K. and the U.S.A.

parity, the next strongest fleet being the Japanese on a ratio of five to three.

Although they did much to stem naval competition, the terms of the agreements led to considerable ill-will among the signatories; notably, between the U.K., the U.S.A., and France on the one hand and Italy and Japan on the other. Moreover, as was later proved, the restrictions were deliberately evaded, especially by Japan. By the Versailles Treaty, Germany was forbidden to build or maintain warships in excess of 10,000 tons, or any submarines. With the establishment of the Nazi regime, these stipulations were openly disregarded, and even the so-called pocket battleships of 10,000 tons were, in fact, nearer 15,000 tons.

#### Importance of the Battleship

Development of the submarine in the First Great War had suggested that the day of the big battleship was over, but new underwater defences restored the capital ship's importance, and in the Second Great War it was still the decisive factor in naval warfare. Aircraft were little used in the First Great War, but later the development of the ship-borne bomber and torpedo-carrying aeroplane inspired a general belief that the battleship could not survive air attack. Here, again, events disproved theory, and battleships operated efficiently and decisively even in narrow waters, such as the Mediterranean, provided they themselves had air cover. The battleship and the aircraft carrier, in fact, became complementary.

Because of the necessity of sailing in convoy, modern navies are obliged to devote much of their total tonnage to small escort vessels. Navies and mercantile marines in wartime now form almost a single service. In Great Britain this has raised the status of the mercantile marine, a fact recognized by officially designating it the Merchant Navy. As a result of experience gained in the Second Great War, the modern wartime merchantman has reverted in some ways to the type existing until the beginning of the 19th century, being heavily armed. The merchant aircraft carrier even carries its own fighter aircraft.

Comparative naval strength was radically altered as a result of the Second Great War. In 1939 the British navy was by a considerable margin the most powerful afloat. By the end of hostilities,

Italy, Germany, and Japan had ceased to be of any naval consequence, while Great Britain drastically reduced her fleet. The U.S.A. had built great numbers of warships of all types during 1938-45, and although she too demobilised many ships and personnel, she was in 1948 the world's dominant naval power. In the years immediately after the Second Great War none of the naval powers built any large warships, as much uncertainty existed as to the effect of atomic weapons and guided missiles. See Aircraft Carrier; Cruiser; Destroyer; Merchant Navy; Royal Navy; Sea Power; Submarine. Consult Brassey's Naval Annual, 1886, foll.; All the World's Fighting Ships, Jane, 1898, foll.; World War at Sea, Tunstall, 1943.

**Navy Board.** Former department of the British naval administration. It dates from the reign of Henry VIII, and was that part of the board of admiralty responsible for civil administration, including the work of shipbuilding, dockyards, etc., as distinct from the office of lord high admiral. The organization was changed from time to time, but the divided control was maintained. Samuel Pepys (q.v.) was secretary to the Navy Board 1665-1679. In 1683 the work of victualling the fleet was taken from the navy board. This divided control came to an end in 1831, when both the navy board and the victualling board were abolished as distinct departments, and came under the direct control of the admiralty. In the U.S.A. the department of the navy which corresponds to the British admiralty is sometimes known as the navy board. See Admiralty, Board of.

**Navy League.** British society founded in 1895 for the purpose of arousing and maintaining interest in the navy, and keeping it strong and efficient. The league carries on propaganda by means of lectures and publications in all parts of the British dominions, and is responsible for the organization of the Sea Cadet Corps (q.v.). It publishes a monthly journal *The Navy*. Its office is at Grand Buildings, Trafalgar Square, London, S.W.1.

**Navy List.** Official handbook of the British navy. It was first issued in 1814, and has been published monthly almost ever since. It gives in normal times the names of all officers in the different branches of the service, and also the names of all H.M. ships and the services they are engaged upon. The quarterly *Navy List*

contains full information about the various admiralty departments, in addition to the details published in the monthly lists. Both the monthly and quarterly lists have ceased to be on public sale since 1939.

**Navy Week.** Week during which the public are allowed to inspect British warships at certain home ports. In 1928 a committee of naval officers and men received Admiralty authority to hold a week's public display of naval activities at Portsmouth, Plymouth, and Chatham, the proceeds to be allocated among a number of naval charities. In 1932 a permanent executive staff was formed. With the exception of these salaried posts, Navy Week is on a strictly voluntary basis. It is generally observed in the first week in August, to coincide with the dockyard holiday, and realizes an average of £25,000 from the three ports; £8,000 of this goes to a trust fund, the remainder being distributed among hospitals and orphanages catering for all ranks of the Royal Navy. Interrupted by the Second Great War, Navy Week was revived in 1948.

**Navy Yard.** Term used in the U.S.A. to describe naval dockyards where ships are overhauled and supplies of stores and victuals maintained. The principal naval yards are Brooklyn on the Atlantic and Seattle on the Pacific coast.

**Nawanagar.** A former Indian state, now the leading entity in the amalgamation of Kathiawar states known as Saurashtra. It occupied the N.W. of the Kathiawar peninsula, with a coast-line on the Gulf of Cutch and the Little Rann of Cutch. Native food grains and wheat are grown. Area 3,791 sq. m. Pop. 504,006. The town, also known as Jamnagar, is a port on the Gulf of Cutch, on the N.W. coast of the Kathiawar peninsula, 160 m. W.S.W. of Ahmadabad; it contains cloth factories and has a pearl fishery. It is a rly. terminus. Pop. 71,588. See Ranjitsinhji.

**Naxos or Naxia.** Largest island of the Cyclades group, in the Grecian Archipelago. It has a length of 21 m. and a breadth of 15 m.; area about 175 sq. m. Mountainous, picturesque, and fertile, its culminating point is Mt. Zea, alt. 3,300 ft. It is noted for wine, and also produces cereals, oil, fruit, cotton, and emery. Its marble quarries have been worked ever since the 6th cent. B.C. The capital is Naxos, a seaport city on the N.W. coast;

it has an old castle, a remnant of the Venetian period, when, with neighbouring islands, it formed a Venetian dukedom; it was captured by the Turks in 1566. Colonised by Ionians, about 1000 B.C., it suffered in the Persian wars before joining the Athenian league. Off Naxos, 376 B.C., the Athenians utterly defeated the Spartans in a naval engagement.

**Nayar or Nair.** People of the Malabar coast, S. India. The Narae of Pliny, situated between Point Dely and Cape Comorin, they number approximately 1,000,000. A community rather than a caste, with exogamous clans, they retain various matriarchal customs, matrilineal descent, and a form of union, *sambandham*, which involves no marital obligation and no dowry. This received government recognition in 1896.

**Nayarit.** State of Mexico. It is centrally placed on the Pacific coast, and is backed by the Sierra de Nayarit. The chief river is the Santiago or Rio Grande de Lerma. The principal products are wheat, sugar, tobacco, coffee, and palm oil, and gold, silver, and lead are mined. Tepic is the capital. Area 11,300 sq. m. Pop. 216,698.

**Nazarene.** Term used in the N.T. In Matt. 2, v. 23, it is said that Joseph went and dwelt in a city called Nazareth, "that it might be fulfilled which was spoken by the prophets, that He (i.e. the Messiah) should be called a Nazarene." The particular words spoken by the prophets have not been preserved in the O.T. as we have it, unless the writer in some way identifies Nazarene with Nazareth (cf. Judges 13, v. 5, "the child shall be a Nazarite, and shall begin to save Israel"). In any case, in Matt. 2 the primary meaning of Nazarene is taken to be "a dweller in Nazareth," and Jesus is often so described (Mark 1, v. 24; Luke 18, v. 37; John 19, v. 19; Acts 3, v. 6, etc.). Nazareth being a small place, the term Nazarene was sometimes, though not always, used in scorn. At Antioch the first Christians were called Nazarenes, and they continued to be so called by the Jews (Acts 11, v. 26). In Acts 24, v. 5, S. Paul is called "a ring-leader of the sect of the Nazarenes."

The term Nazarene was applied to a group of German religious painters of the early 19th century. See Overbeck, F.

**Nazareth.** Town in Galilee, situated on the slope of a hill halfway between the Lake of Galilee and the sea. Now known as



Nazareth. General view of this town in Galilee from the hills to the north-west

En-Nasira, it is famed as the early home of Christ, and the surrounding district is notably fertile. Nazareth was occupied by British forces, Sept. 20, 1918. Pop. 14,200.

**Nazarites** or **NAZIRITES**. Word meaning separated, and applied to certain Jews. These devoted themselves to the service of God, abstained from wine and all products of the grape, allowed their hair to grow long, and avoided contact with dead bodies. Samson and John the Baptist were con-

secrated Nazarites from their birth; but as a rule the vow was only temporary, usually taken for a month, at the termination of which period certain sacrifices were offered, and the head was ceremonially shaved. The Law of Moses prescribed certain regulations concerning it (Num. 6).

**Naze**, **THE**. Headland of Essex, England, 5 m. S. of Harwich. See Walton-on-the-Naze.

**Nazimuddin**, **KHWAJA** (b. 1894) Pakistan statesman See N V

## NAZISM OR NATIONAL SOCIALISM

Edgar Stern-Rubarth, Ph.D.

*The origins, development, and method of government practised by the German Nazi party, as well as the "theory" of Nazism, are here described. A brief account of the steps taken by the Allies to destroy Nazism after the German surrender in 1945 follows. See also Fascism and biographies of Hitler and other Nazi leaders*

Nazism, or National Socialism, was a political movement in Germany, 1923-45, which had offshoots in some neighbouring countries. One of the many local political groups that arose after Germany's defeat in 1918 was a so-called German workers' party, formed 1919, in the back room of a Munich beerhouse. Hitler, demobilised and unemployed, was being used at this time as a spy and agent provocateur to watch subversive movements after the sanguinary suppression of an attempt at forming a Bavarian soviet republic. He found the German workers' party receptive of his ideas and oratory, joined it as member No. 7, and, together with other unemployed or disgruntled men, built it up into a violently revolutionary, aggressive, and noisy political body. On July 29, 1921, he took the place of the former chairman, Drexler, renamed the party *Nationalsozialistischen*

*Deutschen Arbeiterpartei* (N.S.D.A.P., National Socialist German Workers' Party), and proclaimed the principle of the *Führer*: one man in supreme authority, to whom unflinching fealty was sworn by all his followers.

Hitler also advocated a military discipline, and racialism—a violent, primitive anti-Semitism coupled with exaggerated praise of the German, or Nordic, "master race." A number of other principles compiled in 1927 in the party's programme written by Gottfried Feder, such as the "abolition of the thralldom of interest," were dropped when the Nazis assumed power.

In foreign politics three main ideas soon emerged from the rather nebulous demands and promises by which Hitler inspired his audience: abolition of the "enforced" Versailles treaty, which he described as unfair, signed by traitors, and at pistol-point;

negation of all pacifist movements, including the League of Nations, as contrary to the heroic foundation of all life and progress; and acquisition by the sword (since there was no other way) of *Lebensraum* (living space) in the east for the German people. With these ambitions, the Munich Nazi party found, at an early date, allies and confederates in a similar extremely nationalistic and anti-Semitic movement among diehard conservatives in N. Germany, the *Deutschvölkische Freiheitspartei*, established 1920; further, Hitler gained the support of Ludendorff. Though noisy in their attacks on "Marxists" and other supporters of the Weimar republic, these parties had a membership counted at best by tens of thousands; and many who went to hear Hitler's speeches, now in larger beer-cellars such as the famous Hofbrauhaus, did so for amusement.

### The Munich "Putsch"

The grave crisis, however, through which Germany went in 1923, when astronomic inflation deprived millions of their savings and turned the better part of the middle classes, virtually overnight, into proletarians, was the party's opportunity. A conflict arose in Sept., 1923, between the Bavarian general state commissioner von Kahr and the Reich in Berlin; and in the night of Nov. 8-9, 1923, Hitler undertook a "putsch" by which he hoped to bring the military contingent of Bavaria over to his side, and to march with it to Berlin to overthrow the government. The military commander, General von Lossow, and von Kahr, both of whom he had forced to be present at his public announcement, deserted him, however, and the troops were ordered to fire upon the demonstrators, at whose head were Hitler and Ludendorff, Goering and other leaders. Hitler escaped, 14 of his followers died, Ludendorff and many others were arrested, the party was dissolved. Hitler, captured later and sentenced to five years in Landsberg fortress, was released after less than a year upon his pledge never to try illegal means again. During this internment, which he shared with his young friend, the blindly devoted Rudolf Hess, he dictated to Hess the book *Mein Kampf*, the bible of the Nazis.

While he was in prison, the remnants of his party merged with the N. German racialist movement to form the *Nationalsozialistische Freiheitspartei*, headed by Gregor

Strasser, one of Hitler's earliest lieutenants, Ludendorff, and the former conservative von Gräfe. In that guise the Nazis contested, for the first time, a national election on May 24, 1924, and won 32 seats out of a total of 472. In the following election, Dec. 7, 1924, they held only 14 seats out of a total of 493. Released from Landsberg, Hitler re-established his own party in Feb., 1925, under its old name; Ludendorff broke with him, but most of the Reichstag members joined Hitler's Nazi party. This had adopted the red flag with the swastika, and the brown shirt; badges and ranks were introduced among the S.A. (*Schutz-Abteilungen*), originally simply defence groups for the protection of Nazi meeting-places against intruding and aggressive political adversaries.

#### Tolerance by the Army

This development of a paramilitary organization, while provoking severe criticism from abroad and repressive measures by the Berlin govt., was a clever move devised and organized by the retired captain Ernst Röhm, one of Hitler's earliest backers. For it secured benevolent toleration of the movement by the Reichswehr generals, who saw in it a useful reservoir of future conscripts, and enthusiastic support from millions of the impoverished middle class, and unemployed youngsters of the working class who, in the primitive uniform of the Hitler army with its stripes and badges, overcame the sense of inferiority provoked in them by increasing shabbiness of their clothes and their hopeless search for work. In the next general election, May 10, 1928, however, the Nazis secured only 12 of 491 seats. Their press campaign, from 1922 onwards, by the *Völkischer Beobachter* in Munich, directed by Hitler, edited by Rosenberg; from 1925 by the *Illustrierte Beobachter*, edited by Wilhelm Weiss, likewise in Munich; and from 1926 by the *Berlin Angriff*, edited by Goebbels, shocked the bulk of German readers by its recklessness; as did their public demonstrations and brawls with socialists, communists, etc., their brutality, and their increasing use of deadly weapons.

This last was the chief result of the creation, in 1925, of the S.S. (*Schutz-Staffeln*), protective squads—a physical élite of the S.A. clad in black, and assigned as bodyguards to Hitler and other leaders of the party, later to be developed

by Himmler as pretorians, political police, and executioners of the regime. But late in 1929 Dr. Alfred Hugenberg, leader of the *Deutschnationale* (conservatives), signed with Hitler a demand for a plebiscite against the Young plan (*q.v.*), and in so doing signed the death sentence of his, previously the second strongest, party. The demand for a plebiscite failed, but many who had previously been conservatives now joined the Nazi party. The world economic crisis, with its disastrous repercussions in Germany, likewise favoured the Nazis, and when Brüning's new cabinet, lacking a stable majority and backed reluctantly by Hindenburg, dissolved parliament and held another election on Sept. 14, 1930, the Nazis entered the Reichstag as the second strongest group with 107 seats out of 577. State elections in Thuringia (*see* Frick, W.) and in Brunswick had already opened the door for some of their leaders.

#### The Election of 1932

The chance to test the power of their "totalitarian" claim against the established powers in the Reich offered itself in the presidential election of 1932. In the first poll Hitler, made eligible by a trick, won 11.3 out of 37.7 million votes; in the second 13.4 out of 36.5 million. He was defeated by Hindenburg. Drastic measures to prevent another Hitler putsch followed; S.A. and S.S., as well as the Hitler Youth, an organization imbuing boys between 14 and 18 with the Nazi idea, were suppressed. Two months later, when Papen had succeeded Brüning, all these interdicts were cancelled, and a compromise with Hitler—himself bent upon gaining absolute power—was sought. An election on July 31, 1932, gave 230 out of 608 seats to the Nazis, now by far the strongest group in parliament, Goering becoming its speaker; yet, on Aug. 13, in a conference with Hitler, Hindenburg refused to entrust "that Bohemian lance-corporal" with the task of forming a cabinet. When Papen resigned, in Nov., his War minister General von Schleicher succeeded him and tried to win the backing of the still powerful trade unions; aware of their serious financial difficulties, he had dwindling confidence in the Nazis.

Papen and his friends in industry and high finance, still hoping to exploit Hitler for their own ends, supplied him with millions in this crisis (though another election on Nov. 6 reduced

the Nazis' seats to 196), and intrigues in Hindenburg's circle against Schleicher paved the way for the *Führer's* success. On Jan. 30, 1933, he was entrusted by Hindenburg with the formation of a cabinet, which would, it was understood, be a coalition of the bourgeois parties, with Papen as vice-chancellor and wire-puller.

#### Nazism in Practice

A great torch-procession of brown- and black-shirts, singing their blood-curdling battle-songs, inaugurated the régime which, without delay, began to put into practice the "philosophy" laid down for it by Hitler and Rosenberg: (1) the elimination, disfranchisement, and deprivation of rights and property, of the Jews; (2) the abolition of democratic or other electoral institutions; (3) the "stabilisation" of the peasantry by making their property inalienable by sale and indivisible (the "blood and soil" policy); (4) the abolition of Germany's federal institutions, and the introduction of centralised government with provincial governors—*Gauleiter*, or *Statthalter*—in the former *Länder*; (5) the abolition of traditional law, and its replacement by "sound popular feelings," i.e. Nazi arbitrary power; (6) the suppression of freedom of thought, speech, press, worship; (7) the creation, in the guise of employment for some seven million unemployed, of an ever increasing army, and a huge armament industry; (8) compulsory enrolment of children of both sexes from the age of 6 into Nazi training formations; (9) the elimination, by way of concentration camps, sterilisation, and progressively more drastic means, of all "anti-social elements"—especially political opponents of the Nazis; (10) corporate organization, under appointed *Führers*, of all branches of professional, economic, intellectual, artistic, etc. activity.

Fake elections and plebiscites, gradual suppression of all other parties, followed. It was impossible for anybody to secure work unless he belonged to a subsidiary organization of the party. Nearly every public office was duplicated by the creation of a corresponding party authority from the Reich cabinet downwards, so that the real power was exercised not by the state but by the party officials. Adversaries, or potential adversaries, besides being imprisoned, killed, or driven into exile, were deprived of their possessions by a cunningly devised



system of currency regulations that enforced the sale—to the party or its minions—of all their possessions or credits for a fraction of their value. The currency was manipulated also to provide cheap travel in Germany for foreigners, who often thus became accessible to Nazi propaganda, and to get foreign foodstuffs and raw materials at a favourable rate of exchange. Yet the system, after exploiting all such possibilities, could prolong a semblance of success and prosperity only by successful wars of aggression: a fact cynically revealed by Hitler in *Mein Kampf*, though then ridiculed by many in Germany and abroad.

Nazism borrowed the *Führer* principle, the coloured shirts, and the salute by outstretched arm from Italy's fascism; the secret police (*Geheime Staats-Polizei*, abbreviated Gestapo) from the Bolshevik O.G.P.U. or its tsarist predecessor, the Ochrana; the chosen people theory, racialism, from Jewish history; the claim of infallibility and a number of rituals, from the R.C. church; the "Nordic" obsession from French authors such as Gobineau and Vacher de Lapouge, and the British renegade Houston Stewart Chamberlain. Even the name of the party was borrowed from an earlier Austrian group which stood for anti-Semitism and reunion with the Reich, but was not totalitarian. An anti-capitalist trend, originally represented by some of Hitler's closest collaborators—e.g. the brothers Strasser—was dropped when success approached in 1930; its advocates were killed in the famous "purge" of June 30, 1934. A huge literature, forced into circulation for the benefit of the party and its leading members (Hitler, Goering, Goebbels, Rosenberg, Ley, Darré) attempted to present national socialism as a workable, systematic, and complete political thesis.

The number of party members was usually overrated; not including the members of affiliated professional organizations, obligatory for nearly everybody in Germany, they were at the end of 1925, 27,117; 1926, 49,523; 1927, 72,590; 1928, 108,717; 1929, 178,426; 1930, 389,000; 1931, 806,294; 1932, 1,414,975; 1933 and following years, between 3½ and four million.

**DENAZIFICATION.** After Germany's unconditional surrender, May 7, 1945, the Allies agreed at Potsdam, Aug. 2, 1945, that all

members of the Nazi party who had been more than nominal participants in its activities should be removed from public and semi-public office and from positions of responsibility in important private undertakings. The Allied control council in Berlin issued a proclamation Sept. 25 including an article "completely and finally" abolishing the National Socialist party and all its organs. The Nazi party was not tried by the international court at Nuremberg, but four of its organizations, the leadership corps, the Gestapo and *Sicherheitsdienst* (S.-D.), the S.S., and the S.A., were indicted as criminal, all except the S.A. being declared guilty, Sept. 30, 1946.

Allied tribunals, and later, on the Germans' own initiative, German tribunals, were set up in each of the Allied zones to try alleged Nazis. The Allied control council on Oct. 14, 1946, laid down five categories into which German adults could be divided: (1) major political and military offenders, including war criminals, members of the organizations which had been declared criminal, and politically dangerous persons; these on conviction were liable to the death penalty or lesser penalties up to imprisonment for life; (2) offenders including active party or governmental functionaries; (3) lesser offenders; (4) followers; (5) those exonerated.

#### End of the Trials

The French suspended all trials of mere followers in Nov., 1947. In the British zone denazification came officially to an end on Jan. 1, 1948: 2,144,022 persons out of a pop. of 22 million had been screened; 347,667 removed from their posts, another 572,195 had been placed in categories (3) and (4); proceedings were continuing only against "major" Nazis. In the U.S. zone, proceedings against Germans born since Jan. 1, 1919, except members of the criminal organizations, were suspended, May 3, 1947, at which date 3,330,557 Germans had been examined, and 251,845 had been sentenced; in Oct., some 250,000 cases still remained to be tried, but it was expected that denazification in the U.S. zone would be completed in the spring of 1948. In the Russian zone, the denazification tribunals were dissolved on April 10, their work completed.

After their acquittal by the international court at Nuremberg, Fritzsche, Papen, and Schacht were re-arrested and sentenced as major Nazi offenders, the first two by

a German denazification court (*Spruchkammer*) at Nuremberg to 9 and 8 years respectively in a labour camp; the third at Stuttgart to 8 years.

**NAZRANA OR NAZAR.** Term commonly used in India for a ceremonial present, especially one given by an inferior to a superior. The word properly means a vow or votive offering, and the root may be seen in the name of the Hebrew devotees, the Nazarites. Other forms of the word are nuzzerand and nuzzzer.

**Neagh.** Lough or lake of N. Ireland. In the prov. of Ulster, it is bordered by the counties of Antrim, Londonderry, Tyrone, Armagh, and Down. It is the most extensive sheet of fresh water in the United Kingdom, and measures 18 m. in length and 10 m. in breadth; its greatest depth is 102 ft. Numerous rivers feed the lake, the largest of which are the Blackwater and the Upper Bann, while the Lower Bann discharges its surplus waters into the Atlantic Ocean. There is canal communication between the lough and Belfast, Newry, and Lough Erne. *Pron.* Nay.

**Neagle, ANNA** (b. 1904). British screen and stage actress. Marjorie Robertson, sister of the singer



Anna Neagle,  
British actress

Stuart Robertson, was born in London, Oct. 20, 1904, and first appeared on the stage in 1925. After playing in revue, she entered films in 1930 and achieved success by her interpretations of famous characters, e.g. Nell Gwynn and Peg of Old Drury, Queen Victoria in *Sixty Glorious Years* and Victoria the Great, Edith Cavell in a film of the same name, and Amy Johnson in *They Flew Alone*. Later films included *Piccadilly Incident*, *The Courtneys of Curzon Street*, and *Spring in Park Lane*, 1948. She reappeared on the stage as Rosalind in *As You Like It*, Open Air Theatre, Regent's Park, 1934, and, in 1944, as Emma in a dramatization of Jane Austen's novel. She married the film director Herbert Wilcox in 1943.

**Neale, EDWARD VANSITTART** (1810-92). British cooperator. Born at Bath, April 2, 1810, he graduated at Oriel, Oxford, in 1827, and was called to the bar in 1837. He used his wealth in opening the first cooperative store in London. In 1851

he founded the Central Cooperative Agency, which failed, but was the forerunner of the Cooperative Wholesale Society. He organized cooperative societies in other parts of the kingdom, and in 1869 promoted the annual cooperative congress, of which he became secretary, during 1875-91, visiting America in the former year. He joined the Christian Social Union shortly before his death, Sept. 16, 1892. *See* Cooperation.

**Neale, JOHN MASON** (1818-66). Anglican divine and poet. He was born in London, Jan. 24, 1818,



John Mason Neale,  
American divine

studied at Trinity, Cambridge, was ordained in 1841, and in 1846 became Warden of Sackville College, an almshouse at East Grinstead, where he remained until his death. He was a leader of the High Church movement, and was inhibited for 14 years by his bishop. Neale was one of the greatest British hymnologists, composing original hymns and translating many from the Greek and Latin. Among his translations the most popular is Jerusalem the Golden, a part of the Rhythm of Bernard of Morlaix. He published Hymns for Little Children, 1842, and Hymns for the Young, 1844. Neale died Aug. 6, 1866. *See* Hymns. *Consult* Life, E. A. Towle, 1907.

**Neander, JOHANN AUGUST WILHELM** (1789-1850). German historian. He was born at Göttingen,

Jan. 17, 1789, the son of a Jew, named Mendel. On baptism he changed his name to that by which he is known (Gr. new man), and went to study divinity at Halle, under Schleiermacher, whose writings had brought about his conversion. He became professor of theology at Heidelberg, 1812, and from 1813 until his death was professor of church history at Berlin. Many of his works were translated into English. He died July 14, 1850.

**Neanderthal Man.** Palaeolithic race inhabiting Europe during the Mousterian period, named after the Neanderthal ravine near

Düsseldorf where the first human remains of the type were discovered in 1856. Its fossil relics, associated with flaked flint implements, have since been found in widely-scattered cave sites in Europe, Malta, and Palestine. Neanderthal man is not an ancestor of *Homo Sapiens*. *See* Man; Mousterian.

**Neapolis** (Gr., new town). Ancient seaport in Macedonia, near the modern town of Kavala. It was here that S. Paul landed during his second missionary journey, with Silas and Timothy (Acts 16).

**Neap Tides.** Those tides which reach the lowest high-water mark, the highest tides being called spring tides. Neap tides are those immediately following the first and third quarters of the moon, and their range is usually only one-third of the spring tides. *See* Tides.

**Nearchus.** Greek navigator. Born in Crete, he removed to Amphipolis in Macedonia, where he began a lifelong friendship with Alexander, whom he accompanied on his Indian campaign, 327 B.C. Appointed commander of the fleet built by Alexander on the Hydaspes, he undertook to conduct it from the mouth of the Indus along the coast to the mouth of the Euphrates. A further journey round the African and Arabian coasts was abandoned owing to Alexander's death. Nearchus was allowed by Antigonus to retain the provinces of Lycia and Pamphylia, which had been bestowed upon him by Alexander, but nothing further is positively known of him. A summary of his *Paraplois* (coasting voyage) is given in Arrian's *Indica*.

**Near East.** Term loosely applied, generally in a political rather than a geographical sense, to describe Egypt, Palestine, Turkey, and Syria. *See* Far East; Middle East.

**Neasden.** District of Middlesex, England, in the borough of Willesden. Neasden is a station on the Metropolitan and Bakerloo lines. The parish church is dedicated to S. Catherine, and is a modern building. Neasden lies on the North Circular Road. It has some industrial development, but is mainly residential.

**Neath.** Mun. borough, market town, and river port of Glamorgan-shire, Wales. It stands near the mouth of the river Neath, 8 m. from Swansea and 183 m. by rly. from London, on two canals; it is on the site of the Roman fort of Nidum (discovered 1949). The buildings include the restored church of S.

Thomas, the modern one of S. David, the town hall and market house. The site of Gwyn Hall, dating from 1888, was a gift to the town.

The town of Neath lies in a profitable mining district, and the industries include tin-plate works, steel works, foundries, engineering works, etc. In the 12th century an abbey and castle were founded at Neath, and there are remains of both. The town became a borough about the same time and was long under the lords of Glamorgan, who allowed the citizens to hold an annual fair. Market days, Wed. and Sat. Pop. 33,340.

**Neat's Foot Oil.** Lubricant for fine machinery, also used in dressing leather. It is obtained from boiling the hoofs of cattle, for which neat is an old term, and has the advantage of not easily solidifying or becoming rancid.

**Nebo.** God of the ancient Babylonians. The son and interpreter of Merodach, he was regarded as the writer of the first book and instructor of mankind in letters and science. There was a temple to him at Borsippa or Birs-Nimrud. *See* Babylonia.

**Nebraska.** Tributary of the Missouri river, better known as the river Platte (*q.v.*).

**Nebraska.** N. central state of the U.S.A. Its area is 76,653 sq. m. The surface is an elevated plain sloping to a high point of 5,340 ft. in the foothills of the Rockies in the W. to a low point of 825 ft. in the area approaching the Missouri. In the N.W. are the arid "bad lands." The principal river systems, the Platte (with a total length of 1,600 m.), the Niobrara, the Big Blue, and the Republican, flow through the state to the Missouri, the natural boundary on the E. The inland climate is dry and healthful, and the rainfall scanty (annual average 27.7 in., 46 p.c. during May, June, and July). The state has, however, become a great agricultural centre, mainly as a result of extensive irrigation schemes, covering over a million acres. Maize is the crop for which Nebraska is best known, though rye, wild hay, winter wheat, sugar beet, oats, barley, potatoes, and a variety of fruits are also grown. The state is also an important centre for the raising of cattle and the production of dairy products, Omaha, the largest city, being the greatest butter-manufacturing city in the world.

In the N.W. section fossil deposits have been found, proving the existence of man there from



J. A. W. Neander,  
German historian

10,000 to 12,000 years ago, and the skeletons of the sabre-toothed tiger, the dinosaurs, and other extinct animals were also unearthed.

The state is almost entirely rural, there being only two municipalities with a pop. of more than 20,000—Lincoln, the capital, and Omaha, the industrial centre. Five rly. systems traverse the state, with over 6,200 m. of track, and the Union-Pacific rly. has its headquarters in Omaha.

Higher education is provided by a state university at Lincoln, and there are also an affiliated college of agriculture and four state colleges for teachers. Two senators and four representatives are sent to congress. In 1934 the state voted for a unicameral legislature, sitting at the Capitol at Lincoln, the 400-ft. central tower of which, surmounted by a 20-ft. statue of a sower, is a remarkable piece of architecture, built in 1934. In its early history Nebraska was the scene of many battles with the Indians, including the last fought on American soil, 1873. It was admitted to the union in 1867. Pop. 1,315,834. Nebraska city (pop. 7,339), once a flourishing river port, contains John Brown's cave, a haven for runaway slaves on the "underground rly." from the S. *Consult* Nebraska, Old and New, A. E. Sheldon, 1937.

**Nebuchadrezzar** OR NEBUCHADNEZZAR. Name of three kings of Babylon. The most famous, Nebuchadrezzar II, son of Nabopolassar, reigned 604–561 B.C., invaded Judah thrice, taking Jerusalem and carrying many Jews into captivity, 586; captured Tyre, after a siege of 12 years, and invaded Egypt. He restored many temples and rebuilt Babylon, where Koldewey's excavations, 1899–1911, revealed his palace, temples, gates, walls, quays, and canals. The spelling Nebuchadrezzar is that used in the A.V., but Nebuchadrezzar is preferred by modern authorities. *See* Babylon, col. plate; Borsippa; Carchemish; Daniel; Ziggurat.

**Nebula** (Lat., mist). In astronomy, any celestial object not a comet having a diffuse appearance in the telescope. So many quite distinct objects of totally different structure fit this description that the modern tendency is to drop the word altogether and use a more precise terminology for the various star-clusters, galaxies, and interstellar clouds hitherto classed as nebulae. Only a few nebulae are bright enough to be seen with the naked eye as faint hazy patches of

light, but millions can be photographed with the aid of modern equipment.

The first catalogue of nebulae by Messier in 1784 was made to enable these objects to be quickly distinguished from comets. Like Messier's, the Herschels' catalogue of 5 000 nebulae included many objects subsequently found to be star-clusters. Dreyer's New General Catalogue (1887) with its supplements (1894, 1908) contains 13,226 objects, nearly all of which are true nebulae.

#### Two Main Classes

Present knowledge enables us to divide the nebulae into two main classes: galactic and extragalactic. Galactic nebulae are concentrated to the Milky Way and are therefore part of our own galactic system like the stars. They are clouds of gas and dust lying at distances comparable with stellar distances. Extragalactic nebulae avoid the neighbourhood of the Milky Way merely because local absorption in the plane of the galactic system obscures their light in that direction. They are assemblies, like our own galaxy, of hundreds of millions of stars at distances far exceeding stellar distances: they have been aptly named "island universes." The nearer ones themselves contain objects resembling galactic nebulae.

**GALACTIC NEBULAE.** These fall into three classes. The *dark nebulae* in the Milky Way are detectable only by their obscuring effect on the light of more distant stars. An example conspicuous to the naked eye is the "Coal Sack" near the Southern Cross. They lie at distances up to about 1,000 light years; beyond this they doubtless exist but are difficult to detect owing to the presence of foreground stars. There is little doubt that they consist of a mixture of dust particles and interstellar gas. The *diffuse* or *gaseous nebulae* are irregular patches of luminosity usually (perhaps always) associated with bright stars, for example the Orion nebula. They are not self-luminous but shine by reflection or fluorescence, the energy being derived from the light of stars embedded in them. Their spectra may be continuous or may consist (*see* Nebulium) of bright lines, according as the associated star is at a moderate or very high temperature. It is likely that the diffuse nebulae are not essentially different from dark nebulae, being just those parts of the latter which are lighted up by near-by stars. The *planetary nebulae*, of which

only about 150 are known, appear as round or oval patches of light, usually with a faint star at the centre. Their spectra show the bright lines appearing in some diffuse nebulae. They probably consist of extremely hot stars which have thrown off shells of gas that shine by fluorescence.

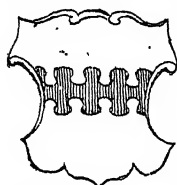
**EXTRAGALACTIC NEBULAE.** These can be classified into three types. The *elliptical nebulae* range from spheroidal to spindle-shaped objects, none of which could be resolved into stars until 1943. Their spectra, however, show that they are composed of stars, even if their distances are too great for individual stars to be distinguished. The *spiral nebulae* (*see* Andromeda Nebula) are more easily resolved, especially those with "open" arms. It is highly probable that our own galactic system would resemble a typical spiral nebula if we could see it from outside. The *irregular nebulae* show no common geometrical form but also consist of millions of stars. The Magellanic Clouds (*q.v.*) are the nearest of these to us. Spectrograms of the extragalactic nebulae show displacements of the spectral lines towards the red which are interpreted as due to an expansion of the universe similar to that predicted by certain forms of the theory of relativity (*q.v.*). *See* Astronomy; Galaxy; Stars.

A. Hunter, Ph.D., F.R.A.S.

**Nebular Hypothesis.** In astronomy, a theory to account for the origin of the planetary system. First suggested by Immanuel Kant, in 1755, and placed on a more definite basis by Laplace, the latter supposed that the matter which now forms the sun, planets, and satellites existed once in the state of gas, and that this gaseous mass formed a vast globe which extended from the sun's present position as a centre out to, or beyond, the orbit of Neptune, and that this gaseous mass was rotating. As it rotated it gradually flattened in shape, its particles were consolidated, and its speed of rotation was increased.

Under the action of increasing speed of rotation and flattening, some of the gaseous matter would be detached from the central mass in the form of a ring. This ring would break up into separate globular masses which would ultimately coalesce in the largest of them and thus form the first, and outermost, planet, and this process would be repeated, to give rise, in turn, to the other planets. *See* Planet.

**Nebulé.** In heraldry, a line of division, or outline of a charge, forming a series of rounded projections, pointing to each side to represent clouds.



Nebulé in heraldry

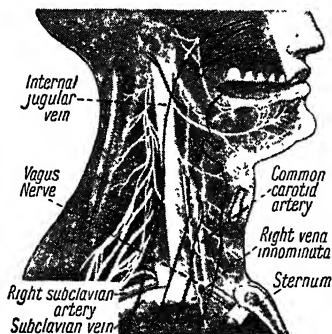
### Nebulium.

Former name of gas responsible for the two bright green lines in the spectra of many gaseous nebulae. In 1927 Bowen identified the lines theoretically as radiations to be expected from doubly-ionized oxygen exposed to high-temperature low-pressure radiation. These conditions cannot be produced in the laboratory.

**Necessity.** Constraint or compulsion regarded as a law which makes anything what it is and excludes its being anything else. Logical necessity is the impossibility of conceiving a thing different from what, according to the laws of thought, we conceive it to be; here belongs the principle of identity.  $A=A$ . Physical necessity is the certainty that a particular cause in similar conditions will always be followed by a particular effect. See Determinism; Kant.

**Necho OR Nechoh.** King of Egypt (610-594 B.C.). The Egyptian Nekau, he succeeded his father Psammetichus I, founder of the XXVIth dynasty. The Assyrian power having fallen, he reconquered Syria, defeating and slaying Josiah of Judah at Megiddo, 609 B.C. He reached the Euphrates and on his return march deposed Jehoa-haz, son of Josiah, replaced him by his brother Eliakim whom he called Jehoiakim, and exacted a heavy tribute from Judah. Nabopolassar, king of Babylon, sent his son Nebuchadrezzar to Syria, with the result that Necho was defeated at Carchemish 605 B.C. and lost the whole of his conquests in Syria and Palestine (2 Kings 23; 2 Chron. 35, 36; Jer. 46). Phoenician seamen sent by Necho are said to have circumnavigated Africa. See Egypt.

**Neck.** Part of the body which unites the head with the trunk. The neck supports the head by means of the cervical vertebrae. In front of the bony pillar lies the oesophagus, terminating above in the pharynx, and in front of these are the trachea and larynx. The thyroid gland is situated in the lower part of the neck, a lobe being on each side of the trachea with an isthmus connecting them across the middle line. The carotid arteries pass up from the thorax to the head at the side of the neck, and



Neck. Sectional view from the side, showing principal veins and nerves

can be felt pulsating close to the anterior margin of the sternomastoid muscle. The jugular veins pass downwards close to the carotid arteries. Close to these structures are the vagus and other nerves passing between the head and the trunk.

The most prominent muscles of the neck are the sterno-cleido-mastoids, one on each side, which run from the breast-bone and inner end of the collar-bone to the mastoid process, a bony prominence just behind the ear; and the trapezii, which pass up from the back and are inserted into the occipital bone at the lower part of the back of the head. See Anatomy; Fibrositis; Hanging; Man; Strangulation; Trachea.

**Neckar.** River of S. Germany, a tributary of the Rhine on the right bank. Rising near the Danube, between the Black Forest and the Swabian Jura, it flows N.E. and N. through Württemberg-Baden, and turns W. at Eberbach to join the Rhine at Mannheim. Its length is about 250 m., and its chief tributaries on the right bank are the Fils, Rems, Kocher, and Jagst, and on the left the Ens. The chief towns on the Neckar are Tübingen, Cannstatt (a suburb of Stuttgart), Heilbronn, Heidelberg, and Mannheim. Though very rapid, the river is navigable for small vessels as far as Cannstatt. See Mannheim.

**Necker, JACQUES (1732-1804).** French financier and statesman.

Born at Geneva, of Pomeranian extraction, Sept. 30, 1732, he entered the Vernet Bank at Paris about 1747, and in 1762 founded a successful bank of his own. Director of the treasury, 1776, he was



Jacques Necker, French financier

made director-general of finance in 1777. He published his *Compte Rendu*, 1781, and then retired, his treatise on French financial administration following in 1784. Exiled from Paris, 1787, he was recalled as director-general in 1788, and was responsible for summoning the states-general and doubling the representation of the third estate. Dismissed on July 11, 1789, he was recalled a few days after the fall of the Bastille. He held office until Sept., 1790, when he retired to Coppet, Switzerland, where he died on April 9, 1804. See *Vie privée de M. Necker, Madame de Staël*, 1804.

**Necker, SUZANNE CURCHOD (1739-94).** French writer. Born at Crassier, canton of Vaud, Switzerland,



Suzanne Necker, French writer

daughter of a Protestant pastor, she was for some time in love with Edward Gibbon before marrying Jacques Necker in 1764. Her salon was one of the most celebrated in Paris, frequented by such men as Diderot, Buffon, André Morellet, and Marmontel. Famed also for her charities, she founded, 1778, and for some years administered, the Hôpital Necker in Paris. She died at Coppet, Switzerland, in May, 1794. Her daughter, Anne Louise Germaine, became Madame de Staël (q.v.). See *Le Salon de Mme. Necker*, G. d'Haussonville, Eng. trans. 1882.

**Necklace.** Ornament for the neck worn by most races from the remotest times. They are usually collars of metal in the form of solid rings, gorgets, open work or filigree, textiles, or of chains, often ornamented with pendants and decorated with enamels, glass, and precious stones. The torque, worn by prominent men among the Gauls, Persians, and other ancient nations, was a rigid necklace or collar of spirally twisted gold. See Anglo-Saxon Antiquities; Assyria; Celt, colour plate; Jewelry.

**Necromancy** (Greek, *nekros*, corpse; *manteia*, divination). Divination by pretended communication with the dead. The art is usually exercised by professional sorcerers, as in the familiar example of the witch of Endor, in 1 Sam. 28, who professed to evoke the spirit of the prophet Samuel at the behest of Saul. In Homer's *Odyssey*, bk. 11, the conversation of Ulysses with Theresias in Hades differs from regular necromancy in

that the shade of the departed seer was not brought back to earth. When Cortès invaded Mexico it is recorded that the spirit of Montezuma's sister Papantzin was evoked, and foretold the downfall of the Aztec empire.

Necromancy still prevails widely in primitive culture. The Zulu witch-doctor causes the voice of his *amatongo* to be heard by means of ventriloquism; in W. Africa the Ewe medicine-man in cases of sickness elicits the future course of the disease by consulting his *tro*; the Melanesian *tindalo*, or ghost, is evoked for advice such as whether a proposed canoe voyage may be safely undertaken.

In medieval Europe the word was corrupted to nigromancy, as if from Lat. *niger*, black, and in that form came to denote the black art, or witchcraft in general. See Divination; Magic.

**Necropolis** (Gr. *nekros*, corpse; *polis*, city). Word meaning a city of the dead. It was anciently applied to an outlying part of Alexandria which was set apart for burial purposes, and is used in connexion with modern cemeteries, such as those at Woking in Surrey and at Glasgow. The burial ground at Woking is served by a rly. station called Necropolis.

**Necropsy**. In medicine, name given to the examination of the body after death. See Autopsy; Post Mortem.

**Necrosis**. In pathology, the death of a limited portion of tissue. Most commonly the destruction of periosteum, or covering of the bone through which the blood-vessels enter, leads to necrosis of the bone. Generally necrosis is caused by failure of nutrition of any tissues. See Gangrene.

**Nectar**. In Greek mythology, the drink of the gods, their food being ambrosia. It was supposed to confer immortality on those who drank it, and on that account was forbidden to mortals.

**Nectaries**. Glandular structures occurring in plants which secrete nectar. This juice, in which fructose, glucose, and sucrose are commonly present, escapes through the epidermis of such nectaries as that of the buttercup. Stomata are present in the surfaces of other plants, e.g. Umbelliferae. At first syrupy, nectar becomes diluted by absorbing water from the underlying tissues. Nectaries are usually so situated that insects seeking nectar must make contact with stamen and stigma. In Umbelli-

ferae they form an exposed cushion above the ovary between the stigmas and the insertion of the stamen. More often they occur deeper in the flower. In the Cruciferae they are on the receptacle at the bases of the stamen; in the Rosaceae, frequently within the hollow receptacle. Any part of the flower may be concerned. *Caltha* forms nectar low down on the sides of its carpels; *Viola* has on two of its stamens appendages which secrete nectar into a surrounding corolla spur. Such containers may prevent the nectar being washed away by rain. Pockets at the bases of buttercup petals secrete nectar, while in larkspur and monkshood the tubular petal nectaries have little other function. Extrafloral nectaries occur on parts of the plant other than the flower, e.g. on cherry leaf stalks. On bracken fern nectaries are found in the forks of its fronds.

**Nectarine**. Edible fruit, a smooth-skinned variety of the peach (*q.v.*). The methods of cultivation and habit of both nectarine and peach are generally identical, but the fruit of the nectarine has a richer flavour, and is more tender of skin than the peach, and therefore must not be touched by hand during development, or the ripened fruit will be bruised and spoiled.



Nectarine. Branch with foliage and ripe fruit

**Nederl and Line**. Dutch steamship company. Running the principal transport services between Holland and the Netherlands East Indies, it maintains frequent sailings from Amsterdam and Southampton to Singapore, Java, and other East Indian ports. Much of the fleet was lost in the Second Great War while carrying troops or cargo.

**Neditch, MILAN** (1881-1946). Yugoslav soldier. After service in the Balkan and First Great Wars, he rose to command a division in 1936 and was war minister in 1940. When Croatia broke away from Yugoslavia in 1941, the Germans made him premier of the puppet state that remained. He fled to Italy in 1945, but was captured by U.S. troops and handed over to Yugoslav authorities. It was announced that he had committed

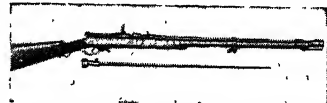
suicide while awaiting trial some time before Feb. 6, 1946.

**Needham, JOSEPH** (b. 1900). British biochemist. From Oundle school he took a Benn Levy studentship in biochemistry, and lectured at Stanford, Yale, Cornell, Oxford, and Polish universities. From 1933 he was Dunn reader in bio-chemistry at Cambridge. F.R.S. in 1941, he led in 1942 the British scientific mission in China, and in 1946 became head of the division of natural sciences, UNESCO. Needham wrote *Man a Machine*, 1927; *The Skeptical Biologist*, 1929; *Chemical Embryology*, 1931; *History of Embryology*, 1935; and *Chinese Science*, 1946. His wife, Dorothy May (born Moyle, 1896), also a biochemist, was elected F.R.S. 1948.

**Needle**. Instrument used for carrying a thread in sewing or similar operations, consisting of a thin, pointed rod of steel, bone, or other material. Sewing-machine needles have an eye at the point; other sewing needles have an eye at the opposite end. Sewing needles are defined according to their construction, use, or function, as drill-eyed, golden-eyed, sharp, blunt, carpet needle, etc. The word is also used for a thin, straight rod of bone, wood, or metal used in knitting; for a light, hooked rod used in crochet; and for a thin, flat piece of metal,

or a light metal rod pivoted at a point along its length, as in a magnetic compass, telegraphic instruments, and apparatus for measuring electric currents. Surgeons' needles for stitching wounds are curved, upholstery needles are double-pointed, sack needles have a square section, etc. See Bone Implements.

**Needle-Gun**. First successful breech-loading rifle for military use. The weapon was invented



Needle-Gun. The first successful breech-loading rifle

by a Thuringian mechanic, J. N. Dreyse, in 1839, and quantities were being manufactured by 1841, as the rifle was adopted by the

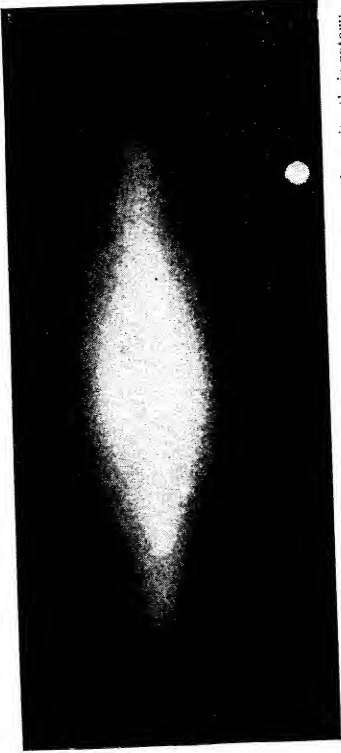




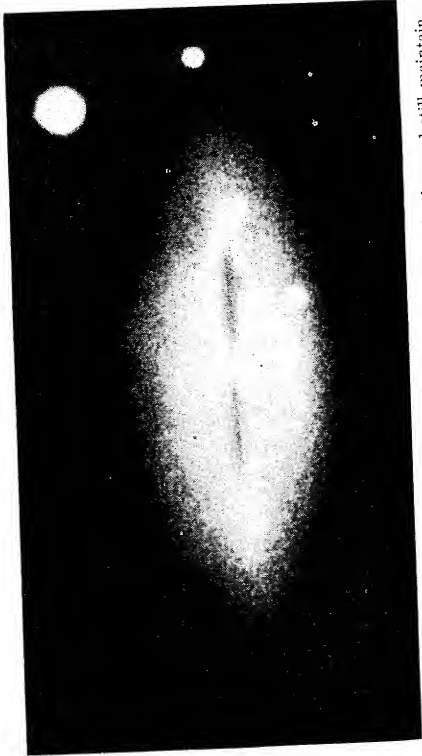




1. Nebulae, whence the stars are formed, are vast, tenuous clouds of luminous gas scattered through space. In their earliest stages, shown by the lower of the two above, they are diffuse and often almost globular



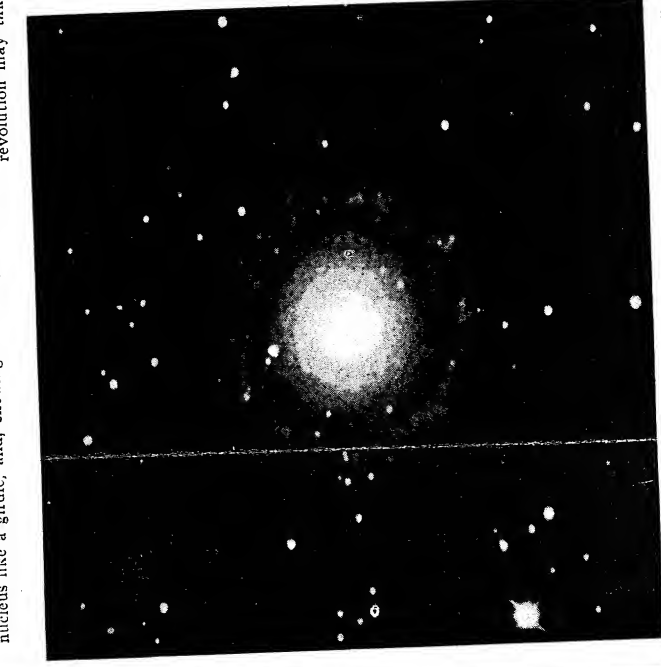
2. These nebulae revolve slowly, but as they shrink under the force of gravity their rotary speed increases. They become flattened at the poles (as seen in Fig. 1) and begin to bulge out round the equator



3. After a certain stage the equatorial "bulge" can go no further and still maintain equilibrium. Matter is then thrown off by centrifugal force, and can be seen as a dark band across the nebula above



4. With further contraction and still faster rotation the ejected matter may form a complete ring. Such is the size of these nebulae that one complete revolution may take millions of years



6. This would look much like the preceding nebula if observed "edge-on." Note that the matter of the rings tends to condense into clots, as is also shown by the second nebula in Fig. 1



7. Perfect rings are, however, rare. More usually the gaseous matter is thrown off from opposite points of the equator only, forming two spiral arms by reason of the nebula's rotary motion



5. A fully developed nebula is shown in the photograph above. Here the nucleus has shrunk so much that the thrown-off matter surrounding it now constitutes most of the visible bulk of the object



8. The clots are nascent stars, or groups of stars, and from them by cosmic accidents planets such as the Earth may be detached; but even the preliminary stages shown in this series have occupied many millions of years

See text, p. 5933

NEBULAE, SHOWING IN SUCCESSIVE STAGES OF DEVELOPMENT THE REMOTEST ORIGIN OF SUNS AND PLANETS.

From photographs taken at Mount Wilson Observatory, California

The fact that A acts without proper care and thereby B is injured will not entitle B to recover damages from A unless A owes B a duty to take care. A famous statement of the limits of the duty to take care was given in the house of lords in 1932: "You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who then in law is my neighbour? The answer seems to be: persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in question."

An example will illustrate the limits of the duty. Y drives his car so negligently that X is killed. A hears the collision and sees the consequences of it and receives such a shock that she is prematurely delivered of a child of which she was pregnant, the child being stillborn. She cannot recover damages from Y because Y owed her no duty. His duty to take care on the highway is limited to persons so placed that it is reasonable to expect they may be injured by his lack of care.

Until the Law Reform (Contributory Negligence) Act, 1945, where a person was injured by the negligence of another he could recover nothing if he himself had even in the smallest degree also caused the injury by his own contributory negligence. By that Act, however, such a person is entitled to recover, but the amount of damages is reduced proportionally to his share in the responsibility for the injury.

**Negoi** or **NEGOTU**. Highest mt. in Transylvania, Rumania. Its alt. is 8,320 ft. It is a peak in the central section of the Transylvanian Alps, and rises E. of the Rotenturm Pass.

**Negombo**. Coast town of Ceylon. It is on the W. coast, 23 m. N. of Colombo, with which it is connected by the coast rly. and canal. It stands in a fertile area planted with coconut palms. There is a fishing industry, and a trade in cinnamon. The Dutch House dating from 1682 is a notable building. Pop. 25,291.

**Negotiable Instrument**. In English law, a document by delivery of which the legal right to the property which it secures may be conveyed. The distinction is between negotiability and assignability. All contracts, except for

personal services and the like, and all property, can be assigned or transferred, but the person who receives them takes no better title than the assignor had; and, further, takes subject to equities and rights as between the transferor and the debtor.

If A draws a bill of exchange, which is a negotiable instrument, in favour of B, and B negotiates it to C, C can sue A for the full amount of the bill, without regard to any claim which A may have against B. Again, if a negotiable instrument is lost or stolen, and is negotiated to A, who takes it in good faith and for value, A has a good title to it. Instruments are negotiable by the custom of merchants, and any instrument may be made negotiable by universal usage. Bills of exchange, promissory notes, and cheques are the most usual negotiable instruments; but bonds to bearer, dividend coupons, bills of lading, dock warrants, wharfingers' certificates, have by statute and custom acquired most of the incidents of negotiability. See Bill of Exchange.

**Negretti**, ENRICO ANGELO LUDOVICO (1817-79). Anglo-Italian optician. A native of Como, he settled in London in 1829, became a glass-blower, and began business as a maker of thermometers in 1843. With his partner, Joseph Warren Zambra (q.v.), he gained a high reputation for optical and scientific instruments at the great exhibition of 1851, thus founding a business which acquired worldwide celebrity. An ardent Italian patriot, Negretti helped the many refugees in England, and extended hospitality to Garibaldi both in his dark days and during the time of his prosperity. He was naturalised in 1862, and died at Cricklewood, Sept. 24, 1879.

**Negri**, ADA (b. 1870). Italian poet. She was born in humble circumstances at Lodi, Lombardy, Feb. 3, 1870, and having become a teacher, won immediate fame by the publication of a volume of poems, *Fatalità*, 1893. After its publication she taught in the normal school at Milan, and was married to a manufacturer named Garlanda. Other volumes of her poems were *Tempeste*, 1896, and *Maternità*, 1904. In 1917 she published *Le Solitarie*, which was a collection of short stories of the loneliness of women.

**Negrin**, JUAN (b. 1889). Spanish scientist and politician. A distinguished physiologist, he was professor at the medical faculty of

Madrid university, and director of the Spanish Physiological Institute. In politics he was a moderate Socialist, and was minister of finance in the cabinet of Largo Caballero, 1936-37. On Caballero's resignation he became premier, May 15, 1937, retaining the finance portfolio and assuming that of national defence, April, 1938. In Nov., 1938, he transferred the government of Spain to Barcelona; and on the final victory of Gen. Franco he fled to France, Mar., 1939, and went to Mexico, 1940. He retained the premiership of the Spanish shadow government until Aug., 1945, when he placed his resignation in the hands of Diego Martínez Barrio, who had been chosen as president-elect by the exiled Spanish Socialists.

**Negri Sembilan**. Territory of Malaya, alternatively called Nigri Sembilan (q.v.).

**Negrito** or **NEGRILLO**. Diminutive form of Negro, used of many peoples of very small stature. The first term is in general use in S.E. Asia, the second in tropical Africa. The Andamanese males average 58.5 ins. in height, have black curly hair, sometimes with a reddish tinge, bronze to black skin, broad head (breadth 83 p.c. of length), broad face, lips full but not everted, and non-projecting jaws. The Semang of Malaya are similar, but with longer heads (breadth 79 p.c. of length), and so, within close limits, are the Aeta of the Philippines and the Tapiro of New Guinea, though the last-named have much lighter skins. Some of the same characteristics may be traced among populations in India, S.E. Asia, Indonesia, and Melanesia, and appear to be heritages from ancient elements in the population of inter-tropical regions of the Old World. The survivors linger on mainly in warm, wet forest regions.

Akka, Batwa, Bambute, Ituri, and Wochua of the Belgian Congo, Babongo of French Equatorial Africa, and a few other groups in the Cameroons average from 53.5 to 55.5 ins. in height, with trunk and legs short and arms relatively long, hair often in "peppercorn" curls, dark rusty in colour, skin often yellowish-brown, but sometimes very dark, nose broad and eyes protuberant. The relation of breadth to length of head varies considerably within these groups. They are for the most part jungle-hunters and collectors, using snares and poisoned arrows. The Bushmen of S. Africa may not be closely related to the Negrillos.

## THE NEGRO AND HIS CHARACTERISTICS

H. J. Fleure, F.R.S., President, Royal Anthropological Institute

*The physical features, customs, and distribution of the Negro in his land of origin, Africa, are here described. Some account of his position in the Americas follows*

Dark skin and black kinky hair are general features of the indigenous peoples of Africa S. of the Sahara and Abyssinia, whence the name Negro (Lat. *niger*, black). These features also occur among some peoples of Malaya, the Andaman Is., Indonesia, Papua, and Melanesia, who are sometimes called Oceanic negroes. Dark skin in Africa is due to melanin grains in the skin, a pigment valuable in stopping excessive short wave radiation (violet and ultra-violet rays) from penetrating the skin and causing blisters, etc. The tropic of Cancer runs through the Sahara, and a few degrees S. of this, near the Senegal river, in N. Nigeria, near Lake Chad, and in the Sudan there live the darkest skinned Africans, matched only, elsewhere, in Angola, a very dry area on the tropic of Capricorn.

Among the rain forests of W. Africa and the Congo, cloud and rain limit ultra-violet rays for a good part of the time, but the intense, moist heat is trying. Sweat glands and skin blood vessels are numerous and large, promoting evaporation when it becomes possible. The large sebaceous glands keep the skin supple. Pores of sweat glands and of hairs are large and loose, promoting evaporation, and the looseness of hair pores makes hair growth so irregular that the hair on exposure bends irregularly, *i.e.* is kinky. Everted lips and broadly open nostrils further promote evaporation. Blood colouring combines with the dark melanin grains, and together they often give a chocolate brown tint. E. Africans vary, as is to be expected along a main line of migration, but rarely show the great development of skin blood vessels. In S. Africa a more golden brown is common.

### Colour of Skin

Skin-darkening is one of a group of specialisations among peoples spreading S. from the Saharan region, a response to environmental conditions. Such specialisations are typically irreversible, so that the dark skin does not become white in a cool climate, nor white skin dark in a dry, hot one. Both are specialisations from an original, probably not very dark, brown. Drifts of hunter-collectors of the Old Stone Age can be traced archaeologically from the W. Sahara

and the Nile southward through E. Africa, and this mode of life still persists among pigmies of the equatorial forest and bushmen of the arid S.W. Both have yellow-brown grey skin and are short, pigmies much shorter than bushmen. They live in small groups with little distinction of rank, and the groups are said to fluctuate with the luck in hunting. Some bushmen have become hangers-on around European settlements. Among hunter-collectors able-bodied men hunt, while women, old men, and children collect.

### Crops and Customs

Cultivation spread through Africa from the Nile valley, but only with difficulty and limitations. Millets were tolerant and adaptable, and have become the traditional food plants, but wheat and barley would not respond to native African methods. A few poor varieties of beans and yams may have been native, and the banana is an ancient introduction into the hot, wet regions, probably from Asia. Grasses grow rank and coarse, poor in vitamin C and phosphates, and farm animals are correspondingly poor in quality, as well as subject to attacks of many parasites, among which tsetse and ticks are widespread, especially in regions where the climate is wet. Milk supply is correspondingly poor, and the cattle are not used for ploughing save under the leadership of recent immigrants (some Islamic peoples in Nigeria, Europeans elsewhere). Farming is therefore of low grade, and care of the soil is almost unknown.

Individual or family property in land is unknown in purely native modes of living; the land belongs to the group, a heritage from ancestors to be passed on down the generations. The group's claim to land may be emphasised by burials on the limits of the area claimed. The spirits of ancestors therefore enter into African belief and ceremonial life. Spiritual power is also believed to reside in certain objects called fetishes, and in persons whom Europeans call witch-doctors who may or may not be connected with the custody and care of the fetish. Crude analogies promote hopes and fears attended by fanciful practices that make up the ceremonial life of the African peoples, as of all others.

The witch-doctor or a war-leader may be considered a chief of a village or of a mobile group of herdsmen, or, especially in the N., of a group of villages, and, under influence of Islamic and other outside elements, the chief may be magnified into a king with supernatural powers, and with the custody of the land of the group and the granting of the right-of-user in that land to the families concerned. The king may himself be subject to ritual restrictions, usually fancies gathering around the central idea of maintaining the spiritual power of the king.

Especially in W. Africa, where many conqueror-groups rule over lowlier folk, secret societies are a great feature and may have much influence. Elders of the village may form a council and daughter villages may remain in association with the mother settlement and in this way grade into states or kingdoms such as Dahomey and Ashanti in the W., the Congo in Central Africa, and Uganda in the E. Leaders of herder groups have at times founded empires of short duration, Chaka in S. Africa being the best known of such leaders.

The pop. of Africa is the mixed result of many drifts from the N., with survivals of the older drifts in the hot, wet forest and the arid S.W. It is usually moderately long-headed, and broad heads are rare save among some forest pigmies whose heads are relatively broad because they are so short. But there are marked contrasts. The forest negro, especially in the W., is long armed and short legged, the men of Sudan have extremely long, thin legs. The drifts into negro Africa from the Old Stone Age onwards show a gap in the sequence, and negro Africa seems to have had no Bronze Age. Iron working spread in a crude fashion, often with stranger- or wandering-smiths. The spread of Islam in N. Africa seems to have brought pressure on negro Africa.

After the discovery of America the introduction of maize, manioc, and other food plants would have permitted a rise in standards of living but for the disorganization which followed the vast increase of the slave-trade. In the late 19th century European powers forced upon Africans the need to adjust themselves quickly to a commercial world, and in some parts European settlers claimed the best lands for themselves.

The forest man builds timber houses, often close set and rectangular, with a large guard room



or social centre for the men at one or both ends of the house-row. On the grass lands the hut may have a wooden frame with bamboo or other filling, often daubed with clay and provided with a conical roof that may be removed from an old to a new hut. The dry areas may have huts entirely of hardened clay and, in the N., are of sun-dried brick in Nigeria, under Islamic influence. Most equipment is of wood, with axes, etc., of crudely worked iron, gourds for holding water, and some hand-made pots. Iron is more abundant, more elaborately worked in the N. than in the S. A remarkable artistic development flourished in Benin (W. Africa) before and about the time of the coming of Europeans, but not due to their influence; sculpture in wood is a notable feature in W. Africa and the Congo, draughtsmanship among the bushmen.

The forest peoples, with marked similarity of physique, have a multitude of languages; the grass-land peoples, who are very varied physically, nearly all speak a variety of Bantu speech, characterised by the importance attached to prefixes.

Only under Islamic influence or just beyond its region have towns been developed by negroes; the general focus of social life is the village. There is no written language, virtually no priesthood, no beast of burden, roads are poor and few, a coinage has not developed. Music is notable for the fine African voices produced with the help of a high arched palate, and for the syncopated rhythms developed through drumming, which is also a means of communicating news. There are also stringed instruments and pipes or flutes as well as a xylophone with resonators, and a variety of noise-makers or musical contrivances.

#### H. J. Fleure

**THE NEGRO IN AMERICA.** Slavery is responsible for the spread of the negro to the Americas. Imported as a slave in the early days of colonisation to do the heavy field work in the cotton and sugar plantations, the negro remained after the abolition of slavery, a very indigestible section of the community in N. America, more assimilable in S. The total negro pop. of the New World is some 25 million. In 1800 there were a million negroes in the U.S.A. (compared with 4½ million whites); in 1940 there were about 13 million (compared with 120 million whites). In 1940 two-thirds of the negroes of the U.S.A. lived in the S. In Mississippi they were close on 50

p.c. of the pop.; in S. Carolina, c. 44 p.c.; in Georgia, Louisiana, Alabama, Florida, c. a third; in N. Carolina, Virginia, Arkansas, c. a quarter. There were nearly half a million negroes in New York City, some 325,000 of them in Harlem.

The negro became a problem in the U.S.A. only after emancipation in 1863. At the end of the civil war, nearly all educated Southerners were disfranchised, and until the Amnesty Act of 1872 the negro and poor white vote, manipulated by corrupt "carpet-baggers" from the N., decided the government of the S. When the plantation owners regained political power, in seven state legislatures they passed laws imposing an annual poll-tax (not large, but cumulative if forgotten), and in some states a literacy test, which virtually disfranchised the negro.

#### Segregation of the Negro

In the south segregation of the negro in public vehicles, schools, places of amusement, churches, hospitals is enforced; intermarriage between negro and white is prohibited. Yet a large number of persons of mixed blood (who are counted as negroes and constitute probably half the negro pop. of the U.S.A.) are born in the S. of extramarital association between white men and negro women. In the N. legal disability scarcely exists, but even there the negro still tends to be segregated, and to be worse off than his white fellow.

The cotton-growing area where the negro pop. is largest is poverty-stricken and backward; illiteracy, crime, and disease (among poor whites as well as negroes) is considerably higher than elsewhere in the U.S.A. The introduction of machinery into cotton-growing, in particular the mechanical picker (which can pick 30,000 lb. in a 24-hr. day compared with a man's 120 lb. in an 8-hr. day), and the reduction in the amount of cotton grown (acreage decreased from 45 million in 1929 to 20 million in 1944) will, it has been estimated, reduce the demand for labourers in the cotton fields by five million between 1945 and 1955. A change-over to livestock rearing, orchard growing, and general farming is taking place in some of the former cotton lands; but not yet at a sufficient rate to absorb so many displaced workers.

The negro predominates in the pop. of the West Indies, except in Cuba and Puerto Rico. The people of Brazil and the N. coast of S. America also include a marked proportion of negroes. In S.

America, however, there is no colour prejudice, and intermarriage between negro and white or negro and Indian is usual. The negroes of N. America are of Mandingo and allied stocks, those of Brazil chiefly Bantu, their ancestors having been brought from Angola. There has been no appreciable immigration of negroes into the New World since the abolition of the slave trade in 1807. See Liberia. Consult *The American Dilemma*, Gunnar Myrdal, 1944; *Inside U.S.A.*, John Gunther, 1947.

**Negro, Río.** River of S. America, the largest left bank tributary of the Amazon. It rises in Colombia by many headstreams, the chief of which, the Guainia, forms part of the boundary of Venezuela. Flowing generally E.S.E., it unites with the Amazon in Brazil, below Manaos. In parts from 9 m. to 15 m. in width, it is barely 1½ miles wide at its mouth. It contains many islands, and through the Cassiquiare communicates with the Orinoco. Its principal affluents are the Arihaha, Parima or Rio Branco, Uaupés, and Padauri. The total length is about 1,400 m., most of which is navigable.

**Negro, Río.** River of Argentina, on the border of Patagonia. Two Andine streams, the Neuquén and Limay, join to form the main stream, which flows thence 400 m. to the Atlantic Ocean. Rapid and obstructed by shoals and islands, it is of little use for navigation. Its total length is 650 m.

**Negropont.** Variant name for the Greek island of Euboea (*q.v.*).

**Negro Powder.** A permitted explosive for use in coal mines. It consists of 57 p.c. ammonium nitrate, 15 p.c. trinitrotoluene, 27.5 p.c. sodium chloride, and 0.5 p.c. graphite, the maximum permissible charge being 24 oz.

**Negros.** Island of the Philippines. One of the Visayan group, lying between Cebú and Panay, it is 135 m. long, has a mean breadth of 27 m., and covers an area of 4,905 sq. m. It is traversed throughout its length by a well-wooded mountain ridge, which contains the active volcano Canlaón or Malaspina, 8,193 ft. high. Sugar, copra, hemp, tobacco, and rice are largely cultivated, and teak and other timbers are obtained. Fishing is an active industry. Bacólod, on the N.W. coast, and Dumaguete on the S.E. coast, are the principal towns. Pop. est. 500,000.

**Negus.** Title of the emperor of Abyssinia, the full form of which is *negus negusti* (king of kings).

**Negus.** Warm beverage made of port (or sherry) and water, sweetened with sugar and flavoured with lemon, cloves, nutmeg, etc. The water, in the proportion of one-half to two-thirds, should first boil. A small addition of brandy is recommended when the negus is to be drunk cold. Its inventor, Col. Negus, was master of the buckhounds, 1727.

**Nehemiah.** Reputed author of an O.T. book, closely related to the books of Ezra and Chronicles. It records the work in Jerusalem of a Jewish cupbearer of Artaxerxes, who in 444 B.C. was appointed Persian governor of Judah. Nehemiah made two visits to Jerusalem, 445 and 432 B.C., during which he inspected the rebuilding of the walls and introduced various social and religious reforms. The Book of the Law of Moses was read to the people, and they were called upon strictly to observe its regulations. See Bible; Ezra.

**Nehru, JAWAHARLAL** (b. 1889). Indian statesman. Born at Allahabad, India, Nov. 14, 1889, he was educated at Harrow and Trinity College, Cambridge, and was called to the bar at the Inner Temple in 1912. From 1913 he practised as an advocate at the



Pandit Nehru, Indian statesman. See also illus. p. 4474

Allahabad high court, and in 1918 became a member of the all-India congress committee. In 1920 he joined Gandhi's non-violent non-cooperation movement, his activities resulting in his being imprisoned in 1921 and 1922. In 1929 he became gen. sec. and in 1936, 1937, 1946 president, of the all-India congress committee. He was imprisoned for the eighth time in 1940 under the defence of India rules, and again in Aug., 1942. Released in June, 1945, he became vice-president and minister of external affairs in the interim Indian govt., June, 1946. The following Dec., with the viceroy, Lord Wavell, and other Indian leaders, he came to London in a final unavailing effort to persuade the Muslim league to enter the constituent assembly. He was prime minister and minister of external affairs, Commonwealth relations, and scientific research in the first govt. of independent India from Aug., 1947; it fell to him to persuade a London con-

ference of Commonwealth prime ministers in 1949 that, despite her intention to become a republic, India should be allowed to remain within the Commonwealth. Consult *Autobiography*, 1948.

**Neilson, JAMES BEAUMONT** (1792-1865). British inventor. Born June 22, 1792, and employed at a colliery while a boy, he became a foreman and manager of the first Glasgow gasworks. He suggested the use of clay retorts in gas manufacture, sulphate of iron for its purification, and the swallow-tail burner. As a result of studies carried on in his spare time at the Andersonian university, he introduced the hot-blast in iron manufacture, for which he took out a patent in 1828. The process was revolutionary, three times as much iron being obtained for the same expenditure of fuel as by former processes, and in partnership with Charles Macintosh (*q.v.*), Neilson made it a commercial success. He died Jan. 18, 1865.

**Neilson, JULIA** (b. 1869). British actress. Born in London, June 12, 1869, she was educated at Wiesbaden and the R.A.M., making her stage debut in Pygmalion and Galatea at the Lyceum, 1888. She married Fred Terry (*q.v.*) in 1891, and after appearing in many well-known plays, *e.g.* A Man's Shadow, Called Back, An Ideal Husband, The Prisoner of Zenda, and A Dancing Girl, she went into management with her husband in 1900 (a theatrical partnership which continued until 1930) when she scored a great success as Nell Gwyn in Sweet Nell of Old Drury. Another of her famous parts was that of Lady Blakeney in The Scarlet Pimpernel, produced at the New Theatre, Jan. 5, 1905, which she continued to play for many years in the provinces. Other plays in her repertory included Henry of Navarre, The Popinjay, The Marlboroughs. She appeared with Seymour Hicks in Vintage Wine, 1934. Her memoirs, This for Remembrance, appeared in 1940.

**Neilson-Terry, PHYLLIS** (b. 1892). British actress. Daughter of Fred Terry and Julia Neilson, she was born in London, Oct. 15, 1892, and studied singing at the R.A.M., making her first appearance on the stage in her parents' company under the name of

Phyllida Terson in Henry of Navarre at Blackpool, 1909. She first appeared on the London stage in the same play the following year, and made a great success as Viola in Twelfth Night at His Majesty's. 1910, later playing many Shakespearean parts, notably Desdemona, Portia, Juliet, and Oberon. Her later successes included a revival of Trilby, 1920; Craig's Wife, 1929; Lady Patricia, 1935.



Phyllis Neilson-Terry, British actress

Her brother Dennis Neilson-Terry (1895-1932) was an actor and producer. He appeared with his wife Mary Glynn in a number of mystery plays, *e.g.* The Terror, The Cat and the Canary, The Man at Six. He died while on tour in S. Africa, July 14, 1932.

**Neilston.** Town of Renfrewshire, Scotland. It stands on the Levern, 10 m. from Glasgow, with which it has rly. connexion. Chief industries are thread manufacture and bleaching. Pop. 4,000.

**Neisse.** Name of two rivers in Silesia, tribs. of the Oder. The more easterly, the Glatzer Neisse (Czech. Nidou), rises in the Sudeten mts. and flows N. It is 120 m. long, and the former fortress of Glatz and the town of Neisse (*v.t.*) are on its banks. The other rises in the Iser mts., is 140 m. long, and helps to form the boundary between Russian- and Polish-occupied Germany (Oder-Neisse line).

**Neisse** (Pol. Nysa). Town of Upper Silesia. It is a rly. junction, 30 m. S.S.W. of Oppeln, and had iron and engineering, brewing and food industries. Here were the cathedral of S. James (1195), the renaissance church of SS. Peter and Paul, and a fine guildhouse (1602). Neisse was captured from the Germans, who had made it a powerful defence point, by the Russians, March 24, 1945. Later in the same year it was taken over by Poland and the population transferred to Germany.

**Neith.** Egyptian goddess. A primitive hunting deity of the Libyan population of the W. delta, worshipped at Sais in predynastic times, she was portrayed with crossed arrows and other hunting emblems, and identified with the Greek Athena. She was afterwards represented with green hands and face as an earth-mother, and at Esneh in Upper Egypt was linked



Julia Neilson, British actress

with Khnum. Her cult regained prominence under the Saite kings of the XXVth dynasty. *See* Egypt.

**Neiva.** Town of Colombia, S. America, capital of the dept. of Huila. It stands on the Magdalena at the head of navigation for light craft, 217 m. by river S.W. of Pogotá. A cattle-exporting centre, it is reached from Girardot by train, car, or aeroplane. Founded in 1550 by Jesuits, it was destroyed by Indians in 1569, and rebuilt in 1612. Pop. 34,700.

**Nejd.** State of Saudi Arabia. Although in theory Nejd is an independent state, it is in effect united with the Hejaz (*q.v.*), since the Sultan of Nejd is also king of the Hejaz. Nejd is situated on the E. side of the Hejaz, and its capital is Riyadh, on the pilgrim road from the Persian Gulf to Mecca. *See* Arabia.

**Nell, LITTLE.** Character in Dickens's novel *The Old Curiosity Shop*. A child of 13 at the time of the story, Nellie Trent kept home for her old and failing grandfather. The account of their flight together, their wandering from place to place, the self-sacrificing love the child shows for the old man, the development of a wisdom far beyond her years in her care of him, and her final death in a country village, was for more than a generation considered one of the most moving passages in fiction. Later readers have found it over-sentimental. Dickens has recorded his own emotions after "killing" Little Nell, when he tramped the London streets all night unable to sleep.

**Nellore.** District and town of Madras state, India. The dist. extends along the Coromandel coast on both sides of the mouth of the Penner for 140 m., and includes a coast strip some 50 m. wide. Rainfall averages 35 ins. annually, but irrigation is necessary owing to its uncertainty. The chief crops are native food, grains, and rice. Mica is mined at Gudur, Rapur, etc., in the S. of the dist. The capital is a small town on the Penner where it is bridged by the Madras-Calcutta main rly. It is joined to Madras by the Buckingham Canal. Area, 7,942 sq. m. Pop. dist., 1,620,000; town, 65,000.

**Nelson.** River of Canada. It carries the waters of Lake Winnipeg in a N.E. direction into Hudson Bay after a course of 360 m. Its main tributary is the Burntwood. Because of lakes and rapids the Nelson is navigable only for short distances. At its mouth stands Port Nelson. The name is

sometimes applied to the same stream, otherwise called the Saskatchewan, before it enters Lake Winnipeg. Total length 1,660 m.

**Nelson.** Mun. borough of Lancashire, England. It is 3 m. N. of Burnley and 30 of Manchester, with a rly. station. The industries include cotton and confectionery factories, and engineering works. The chief buildings are the town hall, market hall, free library, and technical schools. There are several public parks and recreation grounds. Nelson and Colne unite to send a member to parliament. Of modern growth, Nelson was made a borough in 1890. Market day, Fri. Pop. 33,370.

**Nelson.** Town of British Columbia, Canada. It stands on the W. arm of Kootenay Lake, and is served by the C.P.R. and C.N.R., also by lake and river steamers, being 1,100 m. W. of Winnipeg. The capital of the Kootenay district, it is a centre for mining, lumbering, mixed farming, and fruit growing. Here are railway shops, sawmills, and works for making jam, cigars, etc. The buildings include a court house. Nelson dates from 1886, when a silver mine was opened in the neighbourhood. Pop. 5,758.

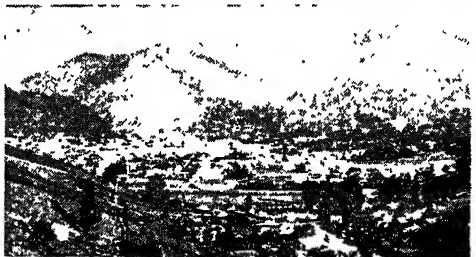
**Nelson.** Town of New Zealand. Situated on Tasman Bay, an indentation on the N. coast of S. Island, it is the chief town of the dist. of the same name. The surrounding country is mainly pastoral. Communication with the other large towns is by coasting steamer; a rly. runs S.W. to the Marine Mts. The first settlement was made at Nelson by the New Zealand company in 1841. Pop. 16,552.

**Nelson.** Former British battleship. Laid down 1924 and completed 1927, she was originally designed as one of the 48,000-ton battle cruisers ordered in 1921 and cancelled under the Washington treaty. Displacing 33,950 tons on a length of 660 ft. and a beam of 106 ft., she was driven by geared turbines developing 45,000 h.p. to give a maximum speed of 23 knots. She mounted a main armament of nine 16-in. guns grouped in three triple turrets; she and her sister ship Rodney were the first British warships to carry 16-in. guns, while her twelve 6-in. guns were the first weapons of this calibre to

be power-operated. Protected by 16-in. armour over the guns and magazines, Nelson was manned by 1,640 officers and men.

One of the strongest units of the Home Fleet, Nelson was mined in a Scottish loch early in the Second Great War, and after repairs was engaged in protecting convoys round the Cape. In Sept., 1941, she was torpedoed by enemy aircraft while escorting a Malta convoy. Sent to Gibraltar for temporary repairs, she returned to Rosyth with survivors from the aircraft carrier *Ark Royal*. She formed part of the fleet supporting the N. Africa landings and covering the invasion of Sicily. The conference between Gen. Eisenhower and Badoglio, resulting in the Italian surrender, took place on board. Again damaged by a mine while supporting the Normandy landings, and repaired at Philadelphia, Nelson joined the E. Indies fleet in 1945, and the Japanese surrender at Penang was signed on board. In 1948 she was listed for scrapping.

**Nelson, EARL.** British title borne by the family of Nelson since 1805. Horatio Nelson's barony, and also his title of duke of Bronte, passed on his death to his brother, the Rev. William Nelson, who, in recognition of Horatio's services, was made Viscount Merton and



Nelson, New Zealand. Looking inland from the N.W. towards the residential quarter of the town

Earl Nelson in 1805. He left no sons, and by remainder the titles passed to Thomas Bolton, a son of the admiral's sister, who took the name of Nelson and became 2nd earl. The Trafalgar Estates Act, 1946, terminated the pension payable to Earl Nelson with effect from the death of Thomas Horatio (1857-1947), 4th earl, or his brother Edward, whichever was the later. Successive holders of the earldom had received a total of £700,000 from the exchequer up to 1946. Edward (b. Aug. 10, 1860) became 5th earl on his brother's death, Sept. 30, 1947. An eldest son is known as Viscount Merton.

## HORATIO, VISCOUNT NELSON

E. W. Wilson, Author of *Nelson and His Times*

*See in addition the articles on Nelson's battles, e.g. Nile; Trafalgar; also those on his contemporaries, St. Vincent; Collingwood; and other seamen. See also Bronte; Royal Navy; Sea Power; Victory*

Horatio Nelson was born Sept. 29, 1758, the sixth child of Edmund Nelson, rector of Burnham Thorpe, Norfolk; his mother was a grand-niece of Sir Robert Walpole, and her brother, his uncle, an officer in the navy. He entered the navy in 1770 as "captain's servant" in his uncle's ship, served in the West Indies, in an Arctic expedition, and in the East Indies. He became captain in 1779; commanded the naval contingent in an unsuccessful expedition against the Spanish fort at San Juan de Nicaragua, 1780; joined Lord Hood's fleet at New York, 1782, when Hood sent Prince William, afterwards William IV, to him for information on tactics; and was employed in the West Indies, 1784-87.

In 1787 Nelson married Frances Herbert Nisbet, a widow of 26 with one son. He commanded the *Agamemnon* in the Mediterranean fleet, in 1793, under Hood; was largely responsible for the capture of Bastia and Calvi in Corsica, in 1794, when he lost the sight of his right eye by a wound; he displayed great gallantry in the action of March 13-14, 1795, with the French fleet, and was bold enough to remonstrate with his admiral (Hotham) on the feebleness which that officer displayed. He blockaded the Italian coast, and attempted to cut Napoleon's communications during the campaign of 1796. When Jervis, later Lord St. Vincent, took command of the fleet and decided to withdraw from the Mediterranean, Nelson was charged with the evacuation of Elba narrowly escaping capture by the Spaniards on his retreat.

### St. Vincent and Abukir Bay

Present at the battle of St. Vincent, Feb. 14, 1797, he secured important results by turning out of the line—contrary to orders and on his own initiative—to attack a part of the Spanish fleet which had been cut off. Of four Spanish ships taken two surrendered to him. In Feb., 1797, he became a rear-admiral, and was knighted. On July 25, 1797, he failed in a night attack on Santa Cruz, Tenerife, and his right arm, shattered by grape, had to be amputated. After some months at home, he rejoined St. Vincent's fleet, and was sent in command of a small detached squadron to watch Toulon, whence Napoleon, with 13 ships of the line under Brueys, was about

to sail for Egypt. In May, 1798, Brueys put to sea, Nelson's squadron having been damaged by a storm. Nelson was joined by reinforcements, bringing his strength up to 14 ships of the line, and hurried in pursuit. After a long search he found and destroyed the French fleet in Abukir Bay, Aug. 1, 1798. Nelson, who had entered the battle with the words, "A peerage or Westminster Abbey," was badly wounded in the head. He was made Baron Nelson of the Nile, and given a pension of £2,000.

In Sept., 1798, he went to Naples, which was under special British protection, was effusively welcomed by Lady Hamilton, wife of the British minister there, and conveyed the king and court to Palermo, when the French took Naples in 1799. On the recovery of the city he was responsible for the execution of Caracciolo (*q.v.*). Created duke of Bronte by Ferdinand I of Naples, 1799, in 1800, he returned home with Lady Hamilton, who now, as he said, became his "wife in the sight of God," and by whom a daughter, Horatia, his only child, was born to him about Jan. 31, 1801.

### Copenhagen

Sent under Sir Hyde Parker to attack Copenhagen, he commanded the squadron of 12 ships of the line, which on April 2, 1801, engaged the Danish forts and ships. The battle was fierce; at one of the most critical moments Parker, from a distance, imperilled success by making a signal of recall. Nelson put his telescope to his blind eye and fought on. Having beaten down the Danish fire and disabled many of the Danish ships he secured an armistice which gave the British all they required. For his victory he was made a viscount.

After a few weeks in England he was appointed to command the British small craft in the Channel, watching Napoleon's invasion flotilla. On Aug. 15 he directed a boat attack on the Boulogne flotilla which failed completely, with heavy loss. In Oct., 1801, as peace was imminent, he was allowed leave and went to Merton Place, Surrey, which Lady Hamilton had bought for him. Here he lived with the Hamiltons.

On May 18, 1803, on the renewal of war with France, Nelson hoisted his flag in the *Victory*, to command the Mediterranean fleet, and a few weeks later began his watch of

Toulon. He did not blockade, but cruised far out, and there were fears that the French might escape without his knowledge. In 1804 Spain joined France, and his work became more difficult. He showed great patience and determination, and, possibly as the result of a promise to Lady Hamilton, never quitted his ship. The French fleet under Villeneuve put to sea in Jan., 1805. The moment he knew, Nelson proceeded first to Sicily, which he had special orders to cover, and then to Egypt in chase. The French, however, had returned to port. "My heart is almost broke," he said of his failure to bring them to battle. In March they came out again, and, joined by one French and six Spanish ships from Cadiz, which brought their force up to 18, sailed for the West Indies.

### "The Nelson Touch"

Nelson, not knowing the direction of their movement, and so short of cruisers that he could not watch them properly, waited for definite news in a position that covered Sicily and Egypt. When information came he followed to the West Indies, rightly concluding that his business was to watch not a particular sea, but the French fleet usually stationed in it. He had with him only 10 ships of the line. He reached Barbados in June, received information which made him conclude that the French were returning to Europe, and followed them once more without delay, sending a small vessel in advance to England. She sighted the enemy on her passage, and thus the admiralty could make its plans. Nelson arrived in Europe ahead of the enemy.

The enemy had actually been encountered by Calder with 15 British battleships off Ferrol with indecisive result, and had turned south to Cadiz. Nelson, after a last visit to England and Merton, went on board at Portsmouth, where the people greeted him with tears of gratitude and love. Off Cadiz he joined Collingwood, and discussed what he called "the Nelson touch"—his plan of battle. He asked the admiralty for a strong force because, as he said, "it is only numbers which can annihilate." The enemy fleet was ordered by Napoleon to put to sea, and on Oct. 21 was fought the battle of Trafalgar.

Nelson drove the *Victory* into the enemy and was engaged by several ships. Conspicuous in his orders, he was mortally wounded by a marksman's bullet and carried below. As he lay dying, he said that he left Lady Hamilton and Horatia "as a legacy to my country." His flag-captain, Hardy, took

a touching leave of him, and, hearing that a great and decisive victory had been won, he died at 4.30 p.m. with the last words on his lips, "God and my country."

Nelson was given a state funeral in S. Paul's on Jan. 9, 1806. His brother was created Earl Nelson of Trafalgar and granted £108,000 to purchase an estate, and a pension of £5,000 a year (see Nelson, Earl). Horatia, his daughter, died in 1881, leaving many descendants of the family of Nelson-Ward. Lady Nelson received a pension of £2,000 a year, but no notice was taken of Lady Hamilton.

Nelson's decision, energy, knowledge, personal magnetism, affection for his subordinates, sympathy with his seamen, and magnificent valour made him one of the supreme leaders of men. He always aimed at decisive victory. His method of gaining it was based on a close study of tactics, in which he had excelled since 1782. He framed his plans with great originality and care, and saw that his officers thoroughly understood them, with the result that in his battles they always acted with energy and without hesitation.

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**Nelson, Thomas, and Sons.** British publishing and printing house. Its founder, Thomas Nelson (1780-1861), was born near Stirling, son of a farmer. He started business in Edinburgh in 1798, after experience in London, and when his two sons, William (1816-87) and Thomas (1822-92), were taken into partnership progress was rapid. Thomas invented a rotary press (1850), and other devices affecting bookbinding, photo-zincography, stereotyping, etc. From the publication of cheap religious works the firm went on to issue juvenile literature, gift books, Royal Readers, and other educational works. The London house was established in 1844. The third Thomas Nelson, a grandson, was killed in the First Great War, and was succeeded as director by his brother Ian, who had as co-director for several years the novelist John Buchan, later 1st Lord Tweedsmuir (q.v.). The firm re-

tains its reputation for juvenile and educational works and for its libraries of cheap reprints from well-known works.

**Nemathelminthes, or NEMATODA.** The round worms, a group of acoelomate animals with elongated spindle-shaped bodies. Some genera are abundant in the soil, some in fresh water, and others in the sea, but the best-known forms are internal parasites of animals and plants. These last usually have a complex life history associated with the need to pass from host to host. Well-known examples are *Ascaris*, species of which occur commonly in man, the horse, and the pig; *Ankylostoma*; and *Filaria*. See Ankylostomiasis; *Ascaris*; Filariasis.

**Nemea.** Valley in Argolis, ancient Greece. Here Hercules was said to have killed the Nemean lion, and here, in the precincts of a temple to Zeus, were celebrated every two years the Nemean games, one of the four great athletic festivals of Greece. See Ludi.

**Nemertea** (Gr. *Nemertes*, the sea-nymph daughter of Nereus). In zoology, a class of flat worms, most of them marine. One or two species occur on land, and a few in fresh water. They are long and ribbon-shaped, without limbs, and vary in size from minute forms to one marine species which is often nearly 100 ft. in length. The most remarkable feature of the Nemerteans is the long, retractile proboscis, forming a tube within the body which can be partly everted and extruded. It is flung out like a lash, which coils round the body of its victim and draws it to the mouth. In some species this proboscis has a spike connected with a poison gland. See Worm.

**Nemesis.** In Greek mythology, daughter of Night and one of the deities of the nether world. She was the goddess of vengeance, punishing the guilty, but at the same time rewarding virtue, and thus became the personification of respect for law and justice.

**Nemi.** Crater lake of Central Italy. It is in the Alban Hills, between Velletri and Albano, 20 m. S.E. of Rome. It is  $3\frac{1}{2}$  m. in circuit, 110 ft. deep, and lies at an alt. of 1,060 ft.; area 70 acres. Of great beauty, it was called the Mirror of Diana, whose temple was in a neighbouring grove. It is still drained by a tunnel excavated by the Romans. Remains of two state barges of Caligula's time have been recovered, as also many other Roman relics, including mosaics, bronze ornaments, rings, etc.

**Nemophila.** Genus of annual herbs of the family Hydrophyllaceae. *N. insignis* was introduced from North America in 1822; it bears conspicuous saucer-shaped blue flowers with white centres, and flourishes in open borders when sown in early spring, or indoors in leaf-mould.

**Nemours.** Town of France. In the dept. of Seine-et-Marne, it is 10 m. S. of Fontainebleau. It stands on the Loing, while a rly. line connects it with Paris. The chief buildings are the 16th century church and a castle. Nemours was the chief town of a county, which in 1404 was made a duchy for the king of Navarre. This belonged in turn to the families of Bourbon, Armagnac, and Foix. After the death of Gaston de Foix in 1512, the duchy passed under various rulers until, about 1670, it was given by Louis XIV to his brother Philip, duke of Orléans. The Orléans family held it until the Revolution. Population (estimated) 5,000.

**Nen or NENE.** River of England. It rises in the W. of Northamptonshire and flows S.E. to Northampton, where it takes a north-easterly direction past Wellingtonborough, Thrapston, Oundle, Peterborough, and Wisbech to the Wash, which it enters 3 m. below Sutton Bridge. It has a canal communication with all the central waterways of England, and is navigable for small vessels. Its length is 90 m.

**Nenagh.** Market town and urban district of Tipperary, Eire. It stands on the river Nenagh, 27 m. by rly. N.E. of Limerick. The well-preserved castle was built in the reign of John of England; in 1651 it was taken by Ireton as Cromwell's deputy. Pop. 4,517. The river Nenagh is 14 m. long and falls into Lough Derg.

**Nennius.** A Welsh historian. Little is known of him, save that he lived in S. Wales and wrote in Latin a History of the Britons, completed in 796. To him are due many of the stories told about King Arthur and the Round Table, but the worth of his work is seriously questioned.

**Nentsy.** People of the R.S.F.S.R. They dwell in the Samoyedes or Yamal peninsula, in Omsk prov., and their chief town is Salegards, or Salokhard, on the Arctic Circle near the mouth of the Ob. See Samoyed.

**Neoarsphenamine.** For this arsenical compound used in the treatment of syphilis, see Neosalvarsan.





*Nelson D. Brantz*



1. As a midshipman, from a painting attributed to T. Gainsborough. 2. As a captain, at the age of 22, after J. F. Rigaud. 3 and 4. Two portraits of Nelson in 1801, as vice-admiral, by Lemuel Abbott. 5. The famous signal flown from the Victory before the battle of Trafalgar. 6. As vice-admiral, after J. Hoppner. 7 The Death of Nelson in the cockpit of the Victory, Oct. 21 1805; from the painting by A. W. Devis

**NELSON: BRITAIN'S NAVAL HERO BEFORE AND AFTER TRAFALGAR**

**Neo-Caesarea**, SYNOD OF. Synod of the Church, held about 315 at a town in Pontus. It passed canons dealing with eccles. discipline, decreeing, *inter alia*, that a priest who married after ordination must be deposed; that no priest might attend a second marriage; and that no one should be ordained under 30 years of age. At a second synod of this name, held about 358, Bishop Eustathius of Sebasté was condemned.

**Neocomian**. In geology, the name given by J. Thurmann to the lowest stage of the Cretaceous system of rocks, usually taken as being synonymous with the Lower Cretaceous. See Cretaceous.

**Neodymium**. One of the rare earth metals. It is so closely associated with praseodymium that until 1885 they were thought to be one element, didymium. Then Welsbach distinguished two separate elements. The precipitated oxalate of neodymium is insoluble in potassium sulphate, as are those of lanthanum, cerium, praseodymium, and samarium. The element, chemical symbol Nd, has an atomic number of 60; atomic weight, 144.27; specific gravity, 6.96; melting point, 840° C.; crystal form, hexagonal, with lattice constants  $a=3.650$  and  $c=5.890$ . Neodymium has been used for giving an amethyst-red colour on porcelain. Didymium salicylate has been tested as a non-irritant antiseptic dressing for wounds. There are a basic sesquioxide,  $Nd_2O_3$ ; a dioxide,  $NdO_2$ ; and possibly a hydrated pentoxide,  $Nd_2O_5 \cdot xH_2O$ . Neodymium forms other salts and may be prepared by fractionation of the double magnesium nitrate. See Rare Earths.

**Neo-Impressionism**. School of painting, an offshoot of Impressionism (*q.v.*). The neo-impressionists carried to extreme limits the analysis of light by the division of colours, *i.e.* the juxtaposition of minute strokes of different primary colours. The movement had a scientific basis, but in the hands of its chief exponents, *e.g.* Seurat, Lucien Pissaro, Signac (*q.v.*), the limitations of the scientific approach were balanced by a return to a greater sense of artistic design than the Impressionists had allowed to be necessary.

**Neolithic** (Gr. *neos*, recent; *lithos*, stone). Term used to denote the later phase of the prehistoric, Stone Age civilization which preceded the use of metals. It is distinguished from the older

Palaeolithic and Mesolithic phases by the polishing and grinding of its stone tools and weapons, which gives them much greater strength than the chipped flints of earlier ages.

It is not, however, from lithic industries as such that the later Stone Age derives its importance in human history. Kitchen-middens, lake-dwellings, inhabited caves, burial mounds, and megalithic stone monuments, the menhirs and dolmens of W. Europe, show that Neolithic man achieved momentous advances in other directions too. Among these were the inventions of basketry, weaving, and pottery, and, most important, the domestication of animals and plants, which turned men from mere hunters and fishers into herdsmen and farmers. The development of agriculture and the more settled life which it brought was the foundation on which civilization could arise. The more abundant food supply enabled the population to increase and stable communities to develop, among which can be traced the beginnings of stone and timber architecture, navigation, and trade. The dead were treated with respect and provided with tombs, *e.g.* the long barrows of the English countryside; religious beliefs were bound up with the attempt to secure the maximum fertility of animals and crops by coming to terms with the unseen powers of nature.

#### Near Eastern Origin

Neolithic culture seems to have arisen in the Near East, and primitive farmers early made their way into the alluvial lands along the Tigris and Euphrates and in the Nile valley, where conditions made farming easy. Neolithic man was already well established in these regions in the 5th millennium B.C. Seafaring activity is traceable in the Aegean by 4,000 B.C. The Near East now forged ahead in the arts of civilization, while the basic features of Neolithic culture were disseminated through Europe during the 3rd millennium B.C. The Stone Age began to pass from Europe after 1900 B.C., when the manufacture of bronze implements began in Hungary and Bohemia.

Although the Stone Age was succeeded among all the progressive peoples of the Old World by an age of metals, there have survived to modern times in every continent primitive peoples whose cultural outlook remained Neolithic even after the existence of metals was learned from external

sources. The New World was peopled in a distant past by bands of Neolithic folk from Asia, who developed through centuries of isolation the cultural elements brought with them. The result was that aboriginal America was still Neolithic at the European discovery. See Anthropology; Callernish; Man; Stone Age.

**Bibliography.** The New Stone Age in Europe, J. M. Tyler, 1921; Our Early Ancestors, M. C. Burkitt, 1926; Dawn of European Civilization, V. G. Childe, 2nd ed. 1939.

**Neon**. Gaseous element; at. no., 10; at. wt., 20.183; density, 0.89990 gm per l. at N.T.P. It is present in the atmosphere in the proportion of about one part in 80,000. It occurs mixed with argon, and was discovered by Sir William Ramsay in 1898 when examining a large quantity of argon. This latter gas was liquefied, and it was found, as the temperature was raised, that a lighter gas than argon was present. To this the name neon ("new") was given. Only two years later could enough of the gas be collected for an extended study. The neon spectrum consists of a great number of red, orange, and yellow lines. Chemical symbol Ne.

**Neon Lighting**. The production of light by the passage of an electric current through a tube containing neon gas is the most common form of luminous tube lighting. At atmospheric pressure all gases are virtually non-conducting. In a tube containing a gas at sub-atmospheric pressure, however, the gas becomes more conductive; and the lower the pressure, the lower the voltage which is required to produce a discharge. Neon gas giving a characteristic red glow needs the lowest voltage per unit length and diameter of tube.

A luminous discharge tube is an evacuated glass tube at both ends of which are electrodes consisting of pieces of metal which are introduced into the tube through a seal. The passage of a current causes electrons to pass between the electrodes with such velocity that they collide with gas particles in the tube. This dislodges positive ions and more electrons. The resulting breaking up of gas molecules by bombardment releases energy which appears as light.

For a tube 20 ft. in length and approximately  $\frac{1}{2}$  in. in diameter, the working voltage for neon gas would be about 3,000 volts A.C. The tube would not start to glow,

however, until about 6,000 or 7,000 volts had been applied. To enable this to be done and to use public electric supply voltages, a special type of transformer is needed; this gives the necessary high voltage on starting, but as soon as the tube lights up the transformer reduces its output pressure to the required figure.

Other gases give different colours, e.g. helium—blue; nitrogen—golden white; carbon dioxide—white; argon—purple. Other hues are obtained by using coloured glass, or putting in the tube a drop of mercury which volatilises and gives a greenish-blue glow to the discharge. Alternating current is necessary for all but the smallest lamps, which can operate direct on mains voltage (A.C. or D.C.). Where direct current is supplied for luminous tube lighting, a D.C. to A.C. converter is necessary.

**Philip Honey**

**Neophyte** (Gr. *neos*, new; *phyein*, to plant). Term applied in the early Christian church to newly baptized converts, as distinguished from the catechumens (*q.v.*). The word is explained by Gregory the Great as meaning "newly planted in the faith." Neophytes wore white garments for eight days after baptism. S. Paul instructs Timothy (1 Tim. 3, v. 6) not to make a neophyte a bishop, but this prohibition was sometimes disregarded in exceptional cases, S. Ambrose being elected bishop of Milan before being baptized, and installed a few days after. The term is also applied to those newly admitted to the priesthood, or to a religious order.

**Neo-Platonism.** System of philosophy which attempted to replace the dualism of mind and matter by monism (*q.v.*), and to solve the problems of virtue and knowledge on a religious basis. Essentially eclectic, it held Pythagorean, Aristotelian, Platonic, Stoic, Christian, Jewish, and other Oriental elements. Three distinct schools of neo-Platonism were: Alexandrian, Syrian, Athenian.

The keynote of the system is supposed direct intercourse with the absolute divine being as the result of ecstatic visions. There are three cosmical principles: the One, absolute unity, which creates by emanation the Logos (word, reason), containing the ideas of things, which in turn produces the Soul, the principle of movement, which represents the ideas in the external world. Individual souls hover between reason and sense, ever striving to free themselves

from the shackles of matter, and to return to the world of ideas, there to be absorbed and lost in God. Although it failed as a popular religion, neo-Platonism left permanent traces, seen in Augustine and Boëthius, in Giordano Bruno, and Jacob Boehme, in Fichte and Schelling, and modern theological speculations such as those of W. R. Inge (*q.v.*). See Philosophy.

**Neoprene.** Form of synthetic rubber, and the first to be commercially successful. Introduced in 1931, it is produced from chlorine, lime, and coke treated in a high-temperature electric furnace. Although neoprene is considerably dearer than natural rubber, it is more resistant to the deteriorating action of sunlight and heat, petrol and lubricating oils, and many chemicals. See Rubber, Synthetic.

**Neoptolemus or Pyrrhus.** In Greek legend, son of Achilles. He joined the Greek forces before Troy in the tenth year of the war, a soothsayer having declared that the assistance of Neoptolemus and Philoctetes was necessary to end the war. Neoptolemus was one of those who were concealed in the Wooden Horse—the stratagem which led to the fall of the city. He killed with his own hand Priam, the king, whose daughter, Polyxena, he sacrificed to the shade of Achilles. At the distribution of the spoil, Andromache, Hector's widow, fell to his lot. He later married Hermione, daughter of Menelaus, and was slain at Delphi by Orestes, to whom Hermione had been promised.

**Neo-Pythagoreanism.** An attempt to revive the doctrines of Pythagoras, combined with Peripatetic, Stoic, and Oriental elements, which originated at Alexandria in the 1st century B.C. Its chief representatives were Nigidius Figulus, a friend of Cicero, and Apollonius of Tyana. Many forged treatises were put forward by enthusiasts as genuine works of Pythagoras (*q.v.*).

**Neosalvarsan.** An organic arsenical compound used in the treatment of syphilis. It is a yellow powder containing 19–22 p.c. of arsenic in the trivalent form. Fresh solutions are given by intravenous injection. See Arsphenamine.

**Neosho.** River of the U.S.A. Rising in the east-central part of Kansas, it flows S.E. and S. into Oklahoma, where it turns S.W. by S. to the Arkansas river, near Fort Gibson. Its length is nearly 400 m.

**Neozoic** (Gr. *neos*, new; *zōe*, life). In geology, all the strata

from the Trias to recent times. The word has been used by some geologists as synonymous with the Cainozoic era.

**Nepal.** Independent kingdom of the Indian sub-continent. It lies N. of the plains among the Himalayas, and adjoins Tibet on the N., and Sikkim on the E. Dhaulagiri and Everest are within the state, which is drained by the upper waters of the Gogra, Gandak, and Kosi. The lower slopes are rainy and forest covered, yielding sal and sisu trees; the valleys are cultivated for rice, millets, tobacco, and oil seeds. Some of these crops are exported in exchange for cottons and metal goods.

The government is a military oligarchy, royal authority being invested in the prime minister, who is always of royal blood and is commander-in-chief of the army. The aboriginal stock is Mongolian, the Gurkhas being predominant; the religion of the great majority is Sanatan, an ancient form of Hinduism. The appointment of the British envoy who resides at the capital, Khatmandu, was in 1934 raised to that of envoy extraordinary and minister plenipotentiary, and a Nepalese representative of the same rank is appointed to the Court of St. James. A narrow-gauge rly. was opened in 1927 connecting Amlekhganj with Raxaul on the Bengal and N.W. rly., 25 m. distant; and in 1940 a second line was constructed from Jayauagar on the frontier to Bijulpara, 33 m. A motor road runs 27 m. from Amlekhganj to Bhimpheidi. A topographical survey was carried out in 1927 by Indian personnel of the government of India. The hydro-electric supply system was constructed in 1933. In 1937 the Bank of Nepal was established in Khatmandu and Nepalese currency notes put in circulation.

Relations between Nepal and Great Britain have been friendly since the treaty of Sagauli, Dec., 1815, which ceded the provs. of Garwhal and Kumaon to India. Gurkha troops fought in great numbers during the two Great Wars, not only in their own battalions but also in the ranks of the Assam Rifles, the Assam Regiment, and the Burma Rifles, of which they formed the bulk. Area 54,000 sq. m. Pop. est. 7,000,000. See Gurkha; Khatmandu. *Consult* Nepal, Land of Mystery, H. Davis, 1942.

**Nepenthes.** Genus of insectivorous plants, commonly known as pitcher-plants (*q.v.*).

**Nepheline.** NEPHELITE, or ELEOLITE. A member of the feldspathoid group of minerals, consisting of sodium aluminium silicate ( $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ ). Some potassium is always present in the natural mineral. The feldspathoid group are characterised by a deficiency of silica as compared with the feldspar group (*q.v.*). This deficiency of silica restricts the occurrence of the feldspathoids to igneous rocks low in silica and rich in alkalis. Hence nepheline is found as glassy hexagonal crystals and grains in phonolites, nepheline-basalts, nepheline-syenites, etc. Eleolite is a massive, dark-coloured variety. Nepheline is worked in the U.S.S.R. as a source of aluminium, as that country has poor resources of the richer aluminium deposits (bauxites). Some varieties of nepheline are used as gemstones.

**Nephtin.** Mountain of Eire. One of the highest summits in co. Mayo, it is situated 10 m. S.W. of Ballina; alt. 2,646 ft. To the W. is Nephtin Beg, alt. 2,065 ft.

**Nephoscope** (Gr. *nephos*, cloud; *skopein*, to observe). In meteorology, an instrument for measuring the motion of clouds. Two types are in general use. Fineman's consists of a horizontal circular mirror and a vertical pointer, carrying a scale, raised or lowered by a rack and pinion. The instrument may be adjusted until the images of the cloud and the pointer are in line with the centre of the mirror. The radius along which the cloud appears to move then gives the direction from which it is coming. In the Besson direct vision method a comb, composed of a number of short upright equidistant spikes, is mounted at its centre on a tall vertical rod. The latter is rotated until the cloud appears to travel along the line of the spikes. The direction is then read off a graduated dial. The movement of the cloud or its image across the spikes or mirror provides a measure of the angular velocity of the cloud, and its linear velocity can then be calculated. See Cloud; Meteorology.

**Nephridium.** Zoological term. It refers to a duct of excretory function in the primitive condition, which is found in a number of animals. In the segmented worms nephridia are a series of metamerically arranged pairs of tubules, each opening to the exterior by a nephridiopore. Internally they either end blindly in a

flame cell (a protonephridium), or project through the coelomic epithelium into the coelomic cavity (metanephridium). They develop independently of the coelom and are to be distinguished from the coelomoduct, primitively a genital duct, which in some animals assumes an excretory function.

**Nephrite** (Gr. *nephros*, kidney). In geology, a variety of amphibole. White to dark green in colour, it is a calcium magnesium ferrous silicate, and has been highly valued as an ornamental stone in all countries and ages. Carved ornaments of nephrite have been found among the remains of primitive man in large numbers in China and Mexico, Switzerland, Germany, France, etc. The word jade is used to describe this mineral and jadeite, as they are extremely similar in appearance. Jadeite, however, is easily fusible, whereas nephrite is infusible. See Jade.

**Nephritis.** Inflammation of the kidney. It may be acute or chronic. Acute nephritis may follow exposure to cold and wet; poisoning by substances which irritate the kidneys, such as cantharides or turpentine; and may occur in the course of scarlet fever, enteric, measles, diphtheria, chicken-pox, and other diseases. It may also be associated with syphilis and tuberculosis. When due to exposure to cold, the onset is abrupt. When occurring in the course of fevers, the symptoms appear more gradually. Shivering fits and rise of temperature, with suppression of urine, may be the first signs. Dropsy occurs early, and may be first observed as a puffiness of the face, or swelling of the ankles.

The patient should be kept in bed, and the kidneys relieved of their functions as much as possible, by stimulating the excretory activities of the skin and bowels. Sweating may be induced by hot air or vapour baths. The bowels should be kept open by saline purges. Pain in the back may be relieved by the application of hot fomentations. Dropsy of the abdomen or of the chest may necessitate removal of some of the fluid by aspiration. See Bright's Disease.

**Nephtys.** Egyptian goddess, perhaps personifying the dusk. The name is the Grecised form of Nebt-het, lady of the house.

She was the wife of Set and sister of Isis, whose lament over the bier of Osiris she shared. Portrayed as a woman crowned by her hieroglyphic symbol—perhaps a house and basket—she was worshipped

at Edfu, Dendera, and elsewhere. See Egypt.

**Nepos.** CORNELIUS. Roman writer of the 1st century B.C. A friend of Cicero, he wrote voluminously on many subjects, but everything has been lost, except a section of a work entitled *Illustrious Men*. This is of no value as a contribution to history, but the simplicity of its style has made it a favourite text-book for beginners in Latin.

**Nepotism** (Lat. *nepos*, grandson). Term applied to the practice of showing undue favour to relatives, especially by ministers of state or others exercising patronage. In Church history the term is applied to the abuse of eccles. patronage by popes and bishops.

**Neptune.** In Roman mythology, the god of the sea, identified with the Greek Poseidon (*q.v.*).

**Neptune.** Eighth planet of the solar system, in order of distance from the sun. Its discovery is remarkable for the fact that its orbit was calculated by Leverrier and Adams before the planet had itself been seen. It was first actually seen by Galle, of Berlin, who found it from particulars supplied by Leverrier on Sept. 23, 1846. It can be seen only with telescopic aid. On Oct. 10, Lassell discovered a satellite, Triton, which was not photographed till 1899 at Pulkova.

The distance of Neptune from the sun is 2,796,600,000 m., and its period of revolution about the sun is 165 years. Its satellite revolves about the planet in a retrograde direction, E. to W., in 5 days 21 hours. Neptune's diameter is 30,900 m., its mass  $17\frac{1}{2}$  times that of the earth, and its mean density 1.61 times that of water; it is thus very similar to Uranus. Its spectrum shows strong bands in the red region identified by Dunham in 1932 as due to methane. Absorption produced by these bands gives the planet its characteristic green colour; a layer of methane 25 m. deep would be needed to produce the observed absorption. The planet shows a small disk with no permanent markings, so no direct evidence of the length of its day can be obtained. Spectroscopic observations suggest a rotation period of about 16 hours, and this is confirmed by the extraordinarily rapid motion of the plane of Triton's orbit, which must be produced by the attraction of an equatorial bulge on Neptune. The rotation is direct, i.e. opposed to that of Triton. See Planet; Sun.

**Neptunium.** Artificial element first obtained in 1940 by bombarding uranium 238 with neutrons; at. no., 93; chemically similar to uranium. Six known isotopes (Np 234 to 239) are all radio-active, with half-lives ranging from 20 hours to 2½ million years.

**Nereis.** Genus of polychaete (many bristled) sea worms. The body consists of a long series of segments, each bearing numerous chaetae or bristles. They have a definite head with tentacles and four eyes. They live in burrows.

**Nereus.** In Greek mythology, an ocean deity with the gift of prophecy. He was represented as an old man with the tail of a fish or serpent. He had 50 daughters, the Nereids, one of whom was Thetis, the mother of Achilles.

**Neri** (Ital., blacks). Name given about 1300 to a faction in Florence. During a quarrel about the way in which the city should be governed, the nobles were split up into two parties, the Neri headed by the Donati family, and the Bianchi (whites) by the Cerchi. This feud disturbed the peace of Florence during the early 14th century. Charles of Valois intervened on behalf of the Neri, and the exile of Dante was due to their hostility. See Florence.

**Neri, PHILIP** (1515-95). Italian priest and saint, founder of the Oratorians. Born at Florence,



S. Philip Neri,  
Italian priest

July 21, 1515, he refused to become heir to his uncle, a wealthy merchant. In 1533 he went to Rome and studied theology. He visited the sick, founded a hospital,

established in 1548 a Confraternity of the Holy Trinity, and delivered daily addresses which attracted princes and cardinals. Ordained priest in 1551, he began five years later to form a number of young men into the Congregation of the Oratory, an order of priests and laymen observing a common rule, but not under vows, their aim being to teach the ignorant and convert the worldly. Remarkable for cheerfulness as well as piety, he died May 25, 1595, and was canonized in 1622. See Oratorians. *Consult* Life, P. J. Bacci, 1622, Eng. trans. 1902; S. Philip Neri and the Roman Society, L. Ponnelle and L. Bordet, Eng. trans. 1932.

**Neritic Deposits** (Gr. *nērītēs*, mussel). In geology, marine de-

posits which have been formed near shore-lines and are largely composed of organic remains, e.g. shelly sands, gravels, coral reefs. They are distinguished from pelagic deposits, which are formed in the deep sea. See Coral; Geology.

**Nernst, WALTER HERMANN** (1864-1941). A German chemist. Born at Briesen, W. Prussia, June 25, 1864, he was educated at Zürich and Berlin universities, and in 1887 was assistant in the Ostwald chemical laboratory, Leipzig. During 1891-94 he was professor of chemistry at Göttingen, and from 1905 held the similar chair at Berlin, where in 1925 he became director of the physics institute. Nernst did fundamental work on reversible galvanic cells and made original contributions in the diffusion, hydration, and dissociation of electrolytes. He established a method of measuring vapour densities at high temperatures, and enunciated the third law of thermo-dynamics. He was awarded the Nobel prize for chemistry in 1920. An incandescent electric glow lamp invented by Nernst was more efficient, though more complicated, than the carbon filament lamp; displaced for general purposes by the metal filament lamp, it is still used in scientific work where concentrated light is required. Nernst died in Berlin, Nov. 18 or 19, 1941. His chief book, *Experimental and Theoretical Applications of Thermo-dynamics to Chemistry*, has an Eng. trans.

**Nero.** Mountain of Italy, a peak of the Julian Alps, in the compartimento of Venezia Giulia. It is 7,370 ft. in height, and 7 m. N.E. of Caporetto. The mountain and region figured in the battles of the Isonzo fought between the Austrians and Italians, 1915-17.

**Nero** (37-68). Roman emperor. Originally named Lucius Domitius Ahenobarbus, he was born Dec. 15, 37, and was the stepson of the emperor Claudius, by whom he was adopted in 50, thenceforth bearing the name of Nero. On the death of Claudius in 54, Nero was made emperor. For the five years of his minority the empire was well administered. Then Nero threw aside his tutors and ministers, and for nine years indulged in that orgy of tyranny which has made his name a byword for all time. His tutor Seneca, his mother Agrippina, his wife Octavia, were all done to death; anyone who offended him, or whom he distrusted, was murdered with or without the form of law.

He plunged into licentious dissipations, and shocked all Roman conventions by posing publicly as



Nero,  
Roman emperor

a musician and an artist. In 64 fires broke out in Rome by which half the city was consumed: men whispered that the destruction had been planned by the emperor himself. But Nero announced that the things had been done by the obscene sect of the Christians, upon whom a frightful persecution was let loose. Life in Rome became a nightmare; the horror grew till Galba, one of the provincial generals, led his troops upon Rome. In the face of danger the coward emperor fled, and when he heard the tramp of the approaching troops, died by his own hand, 68. Theatrical to the end, his last words were "What an artist is lost in me!" See Agrippina. *Consult* Lives, B. W. Henderson, 1903; A. Weigall, 1930.

**Nertchinsk.** Town of E. Siberia, R.S.F.S.R. It is in the prov. of Transbaikalia, on the Nercha, and a station on the Siberian rly., 530 m. E. of Irkutsk. The inhabitants of the district are chiefly occupied in agriculture, cattle rearing, tobacco cultivation, and hunting furred animals. There are lead and silver mines near.

**Nerva, MARCUS COCCURIUS** (32-98). Roman emperor. A man of eminent respectability, though not of great capacity, he was chosen emperor on the assassination in 96 of Domitian after whose tyranny his mild rule was a welcome relief. Nerva took an oath that he would put no senator to death, suppressed the worst of the informers who had disgraced the latter part of Domitian's reign, and interested himself in public charity. He adopted Trajan and died Jan. 27, 98.

**Nerval, GÉRARD DE.** Adopted name of the French writer, Gérard Labrunie (1808-55). Born in Paris, May 21, 1808, he was the son of a doctor. Taught by his father several languages, he read widely and, of a studious and eccentric nature, he soon began to write. In 1828 he translated



Gérard de Nerval,  
French author



Faust, and volumes of verse and prose appeared until, following an attack of insanity, he committed suicide, Jan. 25, 1855. Nerval's best work is in his fantastic stories, *Contes et Facéties*, 1852, and *Les Filles du Feu*, 1854, though Aurélie has special interest as a record of his own madness. Sylvie, 1848-50, is also noteworthy. He also wrote comedies, a drama, and articles for periodicals. Among his friends were Gautier and Dumas. His complete works, appeared in 1876.

**Nerve.** Cord-like structure composed of nerve fibres, i.e. long branches of nerve cells which convey impulses from one part of the body to another. Nerves which exist in the brain or spinal cord are called efferent nerves, and those which carry impulses from the periphery to nerve centres are known as afferent nerves. If, for example, a painful stimulus is applied to the hand, the impression is conveyed by afferent nerves to the brain, which then sends out an impulse through efferent nerves, which withdraws the hand from the source of pain. See Brain; Ganglion; Neuron.

**Nervo and Knox.** British music hall comedians. James Holloway (who adopted the name Jimmy Nervo) was a Londoner, born Jan. 2, 1898, and Albert Edward Cromwell Knox, born July 12, 1896, came from Newcastle-upon-Tyne. Their knockabout fun became famous from their first appearance as members of the Crazy Gang at the Palladium, London, 1931. They were in a number of royal command performances.

**Nervous System.** System of nerve cells and nerve fibres which control or regulate the actions and functions of every part of the body. The nervous system consists of two main divisions, the cerebro-spinal system, comprising the brain and spinal cord, and the vegetative or autonomic, consisting of the sympathetic nervous system, and certain other ganglia, i.e. aggregations of nerve cells and fibres. The cerebro-spinal system controls the movements of muscles and carries out actions consciously directed by the individual. The autonomic system regulates functions and actions which are not under voluntary control, e.g. the peristaltic movements of the intestine and the processes of digestion. The two systems are, however, not entirely independent.

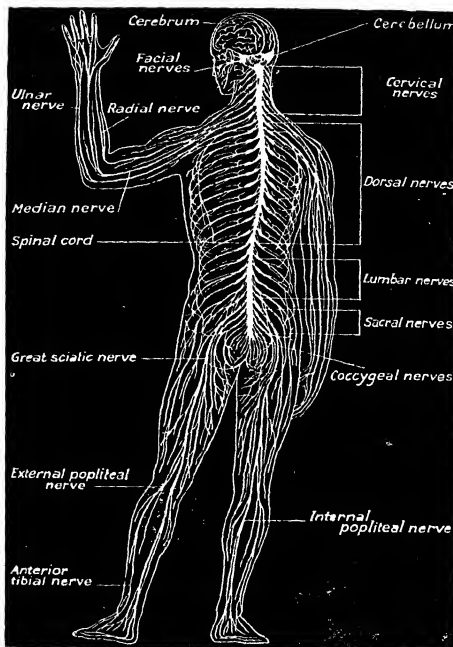
Diseases of the nervous system may be divided into two main

classes: (1) Functional nervous diseases (or more properly disorders), in which no pathological changes in the system can be detected. (2) Organic diseases associated with degeneration in the nerves or nerve cells following injury—for example, a blow on the head, or rupture of an artery in the brain, as in apoplexy; chronic poisoning, as in alcoholic neuritis; effects of micro-organisms, as in diseases of the nervous system due to syphilis; and other causes yet unknown.

Nerves also exercise a nutritive action upon the parts they supply. Thus, when the nerves directly supplying a group of muscles are severed, as for instance by a gun-shot wound, the muscles cease to respond to stimuli, and show marked wasting. When the injury or degenerative process is not in the nerve immediately supplying the part, but is situated in a higher nerve centre, such as the brain, which controls the lower nerves, then the condition known as spastic paralysis is produced, in which stimuli produce jerky, exaggerated movements, and the muscles are usually less wasted. See Apoplexy; Brain; Disseminated Sclerosis; Ganglion; General Paralysis of the Insane; Hysteria; Infantile Paralysis; Locomotor Ataxia; Meningitis; Motor Nerves; Myelitis; Neuralgia; Neurasthenia; Neuritis; Neurosis; Paralysis; Paraplegia; Spinal Cord. Consult Integrative Action of the Nervous System, Sir C. Sherrington, new ed. 1947.

**Nesbit, Edith** (1858-1924). British poet, novelist, and writer of children's stories. Born in London and educated in France and Germany, in 1879 she married Hubert Bland (1856-1914), and the two were original and active members of the Fabian society. She published several books of poems and some somewhat sentimental novels, e.g. *Thirteen Ways Home*, 1901, but is chiefly remembered for her many delightful stories for children published regu-

larly between 1899 (*The Would-be Goods*) and 1913 (*Wet Magic*), especially the series dealing with the Bastable (*q.v.*) family, and another group of related tales, *Five Children and It*, 1902; *The*



**Nervous System.** Diagram of the network of nerves in the human body seen from the back

*Phoenix and the Carpet*, 1904; and *The Story of the Amulet*, 1906. Many of her stories were first serialised in the *Strand Magazine*. She died May 4, 1924. Consult Life, D. L. Moore, 1933.

**Ness.** Topographical term for a cape. It occurs in place-names on the E. and S. coasts of Great Britain, e.g. Sheerness, Buchan Ness, Dungeness. Like naze, it is akin to nose.

**Ness.** River of Scotland, in the co. of Inverness. It comprises the 7 m. waterway from Loch Ness to Moray Firth, and is noted for its salmon-fishing. Parallel with it is the N. section of the Caledonian Canal. See Inverness.

**Ness, Loch.** Lake in Inverness-shire, Scotland. It forms a part of the Caledonian Canal, and lies in the valley of Glenmore, receiving the waters of the Oich, Morriston, Foyers, Tarff, and other rivers, while its surplus waters are carried to the Moray Firth by the river Ness. Length 22½ m., average breadth about 1 m., greatest depth 754 ft.

The legend of the Loch Ness monster dates from the summer of

1933, when apparently reliable witnesses, including a local minister, reported that a marine creature—estimated by one observer as 60 ft. long—had appeared in the waters of the loch. It was described as having a small head on a long neck, and a long body with a number of humps; it could swim fast, but mostly remained just below the surface. A watch party in 1934 took photographs which appeared to establish the presence of some large and unfamiliar creature; but its identity remains a mystery.

**Nesselrode, CHARLES ROBERT, COUNT** (1780–1862). Russian diplomatist. Born at Lisbon, Dec. 14,



*Signature of Charles Robert Nesselrode*

1780, he was the son of the Russian minister there. Educated partly in Berlin, he spent some time in the navy and army before entering the diplomatic service. He gained experience of un-

rivalled value, and also the friendship of Talleyrand and Metternich, during the European negotiations of which Napoleon was the central figure, 1807–11. He accompanied the Russian army that invaded France in 1814, and at the congress of Vienna was the chief instrument of the tsar Alexander I in pressing for the policy of the Holy Alliance. He was minister for foreign affairs from 1815 until 1856. Although Alexander's successor, Nicholas I, did not always act upon his advice, Nesselrode was the most influential Russian statesman of his day. He died March 23, 1862. His letters and papers were edited by A. de Nesselrode, 1904.

**Nessler's Reagent.** Alkaline solution of mercury and potassium iodide, employed as a test for ammonia, with traces of which it gives a yellow colour, and with larger quantities a brown precipitate. On account of the delicacy of the test it is adopted for detecting ammoniacal impurities in drinking water.

**Nessus.** In Greek mythology, one of the Centaurs. Having attempted to carry off Deianeira, the wife of Hercules, he was shot by the latter with a poisoned arrow. Nessus, when dying, gave Deianeira his infected cloak or shirt, declaring that it would win back the love of her husband should he prove unfaithful. The jealous wife sent Hercules the cloak, which he

put on, and died in fearful agony. Nessus's shirt is proverbial for an intolerable burden. *See* Centaur; Deianeira; Hercules.

**Nest.** Shelter constructed by an animal for the purpose of rearing its young. The nest-making instinct is common to a large part of the animal world. Among mammals most of the rodents construct nests or nursing chambers, those of mice being familiar, and many of the insectivores have the same habit. Many fishes, e.g. the common stickleback, build nests. Among the insects bees, wasps, and ants construct elaborate nests in which to rear their larvae, and many spiders make nests of silk, in which the eggs are deposited and the young kept for a time.

Nest building has attained its highest development among the birds as a class, culminating in the wonderful constructions of the weaver birds and tailor birds. As to some of the gregarious birds, a huge structure is built which contains the individual nests of many pairs.

Generally the most elaborate nests are made by those species

whose young are most helpless in the earlier stages of life. Where, as in the game birds, the young are able to run about and pick up food soon after being hatched, the nest is almost always on the ground and of simple construction. Birds, like finches, which have many enemies take the most pains to conceal their young, either by placing the nest in an inaccessible spot, or by covering the outside with lichens or other material to match its surroundings. *See* Bird; Cassiques.

**Nestor.** In Greek legend, king of Pylos, who in spite of his years took part in the Trojan War, in which his counsel was highly valued. As a young man, he had taken part in several adventures, including the expedition of the Argonauts and the hunt for the Calydonian boar. He was one of the few Greek leaders to reach home safely after the fall of Troy. *See* Troy.

**Nestorianism.** Christian heresy which caused the council of Ephesus in 431 formally to define the dual nature of Christ. It is named after Nestorius, conse-



Nest. Various forms of nest built by common British birds. 1. Coot, floating on water. 2. Redstart, hole in wall or tree. 3. Willow warbler on the ground among bracken. 4. Wild duck, under bushes or hedges. 5. Nightingale, built of dead oak leaves on grass, at the base of bushes. 6. Reed bunting, in small trees growing in swampy ground

crated bishop of Constantinople in 428, who, if he did not originate, formulated in somewhat hazy language the doctrine that the B.V.M. could not be called *Theotokos*, Mother of God, because not God, but only the temple in which God dwelt, was born of Mary. In other words, he appears to have believed that in Jesus Christ there were two Persons and two Natures, that Christ's humanity was but the temple of His divinity, and that God the Son did not endure human suffering or go through human experiences. Nestorius was deposed, excommunicated, and banished to Egypt, where he died in 435. The heresy spread to Syria, Persia, India, Central Asia, and China, and communities in Iraq, Kurdistan, and Malabar, India, preserve the name but not the heresy. See Eutyches; Monophysite; Theodore; consult Nestorians and their Rituals, G. P. Badger, 1852.

**Net.** Openwork fabric of cords or threads which cross each other at right-angles and have comparatively large spaces between them. The threads or cords are knotted at their intersections; in this respect net-making differs from weaving, where the intersecting threads merely cross each other. The open spaces in a net are called meshes, and these correspond in size with the pin, which is a straight piece of wood of oval section used in net-making.

Net-making has been practised from the earliest times. Records of it have been found in the Swiss lake dwellings and in the paintings and sculptures of Assyria, Egypt, Greece, and Rome. The Chinese make fine silk nets, and the Eskimos weave nets from sinews and strips of sealskin. The chief materials now used in nets are hemp, cotton, and flax.

Fishing nets made from cotton are light, easily managed, and extremely buoyant. The majority of nets are made by machinery, the first practical loom having been invented by James Paterson in 1810. Types of fishing nets are the seine, which is thrown from a boat or the shore and then drawn back; the trawl, which is towed from a boat; the drift, which goes with the tide; and the moored net, which is stationary. Nets used in the Mediterranean tunny fishery are nearly a mile long, while those of deep-sea trawlers will bear up to 20 tons of fish.

Fly nets are used to catch birds on the seashore and clap nets for smaller birds. Very fine nets take

butterflies and other insects, and also give protection against mosquitoes. See Lace.

Wire netting, made by machinery in the same way as fabric netting, is used for fencing, and in the First Great War was put down for the surface of military roads across the Sinai desert. A heavier type in the Second Great War provided a landing surface at emergency military airfields. In wartime heavy steel netting, laid and lifted by ships specially designed for the purpose, is placed across harbour entrances and around warships at anchor to prevent torpedo attack. Steel netting, suspended from the sides of ships passing through areas liable to submarine attack, may have prevented 70 p.c. of probable sinkings in 1939-45. Quantities of fabric netting, festooned with coloured cloth, were used for camouflaging men, vehicles, and positions in the war; every British military vehicle carried sufficient netting to cover it while parked. Rope nets were fitted to transports for the rapid disembarking of men into assault craft.

**Net-ball.** Outdoor or indoor game. Although it is generally played by women, it is suitable for



Net-ball. A goal having been missed, a tussle for the ball ensues

either sex or for mixed sides. The pitch, similar in shape to a hockey pitch, usually measures 100 ft. by 50 ft., but may be varied according to the number of participants on either side, generally seven. Around the goals, which are fixed in the centre of the end lines, a semi-circle 16 ft. in radius, called the shooting circle, is drawn, and in the centre of the field a circle 4 ft. in diameter is marked, while the playing pitch is divided

into three courts of equal size by lines drawn transversely to connect with side lines.

The goals are single upright posts, each fitted with an iron ring 15 ins. in diameter, placed horizontally 10 ft. above the ground and projecting 6 ins. from the post. Attached to the ring is a net, open at the bottom, through which the ball has to be passed to score a goal. The ball is an ordinary Association football, 27 to 28 ins. in circumference. The opposing teams at the start of the game, which is played in two periods each of 15 minutes' duration, unless otherwise arranged, line up in the field, the respective positions being goal-scorer, attack, attacking centre, centre, defending centre, defence, and goal-keeper.

The game is begun by one of the two umpires, each of whom controls half the playing field, bouncing the ball in the centre circle, while the opposing centres stand outside the circle with their backs to the side lines. It proceeds when one of the centres succeeds in catching the ball, which is then batted or thrown from one player to another, until it is received by either goal-scorer or attack, standing within the shooting circle, who then attempts to shoot it into the net.

Infringements of the rules, such as offside, two players of one side holding the ball at the same time with both hands, carrying the ball, and the body foul, i.e. obstructing an opponent by interposing the body, are penalised in two ways, the first two by a free pass, and the last two by a free throw at goal, awarded to the side offended against. When the ball passes over either of the side lines, a throw-in is given against the side that caused the ball to leave the field.

In five- and seven-a-side games defending players are adjudged to be offside if they enter the attacking court, and attacking players if they enter the defending court. In nine-a-side games those players who leave their own courts are offside. The rules of the game are governed by the All England Net-ball Association.

**Netheravon.** Village of Wiltshire, England. Saxon work is seen in the tower of its 13th century church. Situated 4 m. N. of Amesbury on the edge of Salisbury Plain is a R.A.F. station which maintained fighter aircraft in the Second Great War. An infantry weapon school and machine-gun school were established, later known as the Small Arms School.

# THE NETHERLANDS AND ITS HISTORY

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*A description of the physical features, history, and institutions of the Netherlands is followed by a separate account of happenings in that country immediately before and during the Second Great War. See also articles on the towns of Amsterdam; The Hague; Rotterdam, etc.; on the provinces, Friesland; Holland; Zealand, etc.; on famous men of Netherlands history, art, and literature: e.g. Barneveldt; Couperus; Groenewoud; Vondel; William the Silent; Witt; and the article on Dutch School. See also Indonesia*

The Netherlands is the official name of the kingdom often called Holland. That name properly belongs only to the N.W. of the country, which was the county of Holland in the Middle Ages, the prov. of Holland in the republic of the Seven United Provinces, and



Netherlands  
arms

is today organized in two provinces, N. Holland and S. Holland. The importance of this region is such that the Dutch themselves, too, in common parlance mostly extend its name to the whole country, although the words *Nederland*, *Nederlander*, *Nederlands* (the language) are always used in official or scholarly language and by more careful writers or speakers. Historically the name Netherlands, French *Pays-Bas*, Dutch *Nederlanden*, was common to the entire Low Countries, ruled over by Charles V and Philip II in the 16th century and consisting of 17 provinces, covering the area now occupied by the kingdoms of the Netherlands and Belgium and a strip of N. France.

The Netherlands, composed of eleven provinces—Friesland, N. Holland, S. Holland, Zealand, Utrecht, Groningen, Drenthe, Overijssel, Gelderland, N. Brabant, and Limburg—has an area of 13,551 sq. m., or 15,771 including gulfs and bays. It is bounded W. and N. by the North Sea, and on the E. by Germany, and on the S. by Belgium. In the S.E. corner, Limburg runs down between Germany and Belgium, assuming special strategic importance in consequence.

In the S. of Limburg is the highest point (1,050 ft.) in the Netherlands. Other outcrops of older formations occur in the E. provs., also sandy tracts 160–325 ft. high. The rest of the country, about 99 p.c. of the whole, is a comparatively recent alluvial or diluvial deposit, little of it exceeding 16 ft. above sea level, while much is below—some even 6 ft. below—sea level. This fact dominates the Netherlands in all its aspects.

Physically, the country slopes down from E. and S.E. towards the

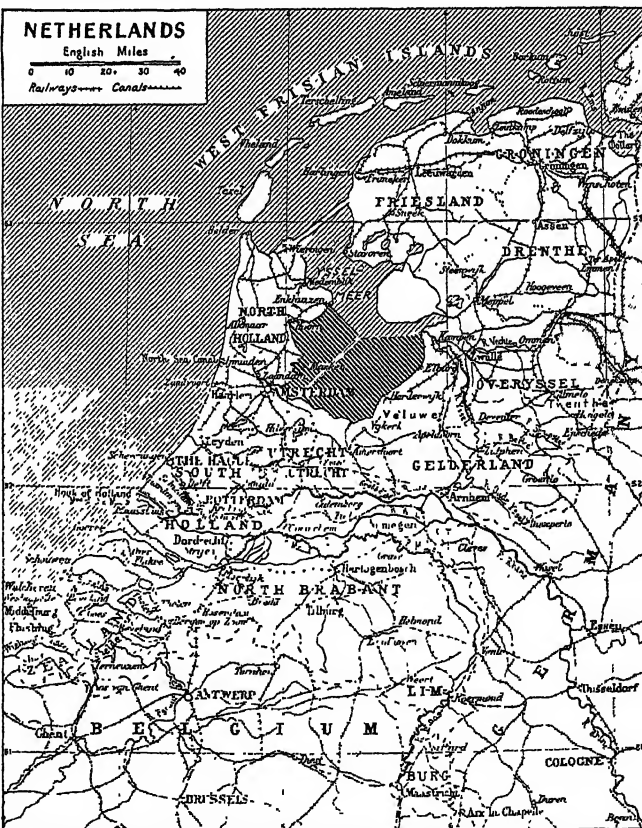
North Sea in W. and N. The sea would rush in and overwhelm this lower-lying area but for a natural protecting rim of sand-dunes, artificially strengthened. Across this area the rivers flow to the North Sea—Lek (Rhine), Maas (Meuse), Waal, Schelde being the chief—from the higher continent beyond. In the past the sea has often rushed in with devastating effect, of which visible signs are the Dollart, 1277, and the broken coastline of the Frisian, S. Holland, and Zealand islands. The former Zuyder Zee resulted from a sea invasion of 1170. At all times, too, the precarious river levels threaten internal floods.

Faced with unique problems of defence works against the waters, the Netherlands has, throughout

historical times, possessed a unique public department to cope with them, known as *Waterstaat*, or the state of the waters. The works of defence, reclamation, and drainage, directly or indirectly comprehended by the *Waterstaat*, are complicated, and for a great part invisible.

Every indyked area, of whatever size or level, the waters within which are constantly organized and controlled as a unit, is called a polder. Nearly half of the Netherlands is polderland. There are sea-polders and land-polders, and there are also *droogmakerijen*, parts where the lakes or meres formed after excavations of short peat have been drained.

Dutch peat (*turf*) is of two kinds, hard (short) and loose, according as it originates in low or high fen.



Netherlands. Map showing the waterways and canals, and the administrative divisions. The heavily shaded area is under reclamation (see text)

Some 20 p.c. of the Netherlands is fen, the greater proportion of it low, in the maritime provinces. Both kinds of peat are everywhere being removed; short peat dredged and dried from the low fens, for example, and loose peat dug off large areas, as in the famous "fen colonies" of Groningen and Drenthe. The place of both is taken by green harvests.

**LAND RECLAMATION.** The map of the country today is very different from that in earlier centuries, for while in places new lakes or meres formed, in others islands have been added to by indykings, and old lakes have been reclaimed. In the first half of the 17th century a number of lakes in N. Holland, of which the Beemster (c. 70 sq. m.) was the largest, were turned into fertile land; in the middle of the 19th century the Haarlem Lake, considerably more than twice as extensive as the Beemster. The land there reclaimed, which preserves its curiously artificial appearance, intersected by straight canals and fenced in by high dykes, is inhabited by some 29,000 people.

#### Zuyder Zee Reclamation

The reclamation of the Zuyder Zee, the great 20th century example of this kind of enterprise, was undertaken by the state in 1918. During 1920-24 a dyke was constructed connecting the island of Wieringen with the mainland (1½ m.); during 1927-33 the immensely heavy dyke, nearly 20 m. long, between Wieringen and Friesland, was built; this turned the Zuyder Zee into a lake. By 1930 the smallest of the four large polders to be constructed—an area adjoining the island of Wieringen and slightly larger than the Haarlemmermeer—had been reclaimed. When the Second Great War broke out, the N.E. polder, adjoining the mainland of Friesland, Drenthe, and Overijssel, with an area twice as large as that of the first, was dry, and during the war it began to produce wheat. A less monotonous landscape and more attractive villages have been created than in the Haarlemmermeer. The keen land hunger among the farmers' sons means there is no difficulty in peopling the new lands with an enterprising and skilled pop.

In the last hundred years the Dutch have also reclaimed enormous tracts of waste land, especially in the Veluwe (prov. of Gelderland), in the S. and E. of N. Brabant, in Drenthe, and in the S. of Groningen. Deforestation has accompanied this process in the past, but has now been checked.

Before the Second Great War the soil of the Netherlands was divided as follows: grassland, 41 p.c.; arable land, 28 p.c.; forest, 8 p.c.; horticulture, 3 p.c.; waste land, 8 p.c.; roads, land built upon, etc., 12 p.c.

**ECONOMIC DEVELOPMENT.** The pop. of the Netherlands grew from slightly over 2½ millions in 1830 to over 9 millions in 1945, an increase promoted during the 20th cent. by excellent sanitary measures—leading to the lowest infant mortality in the world—and by good housing conditions.

Before the Second Great War 38 p.c. of the pop. was employed in industry. Important industrial centres were Twente (E. Overijssel), textiles; Tilburg, textiles; Eindhoven, the great Philips firm making wireless instruments, vacuum cleaners, and other electrical apparatus, which in 1935 constituted 8 p.c. of Dutch exports; Limburg, coal mining; 20 p.c. of the pop. is engaged in agriculture (in 1900, 30 p.c.).

The Netherlands is far from self-supporting in foodstuffs, especially grain. Holdings are generally small, cultivation is intensive and on a high technical level. Important for exports are dairy produce, especially from Friesland and N. and S. Holland, fruit, vegetables, and flowers, e.g. from the Westland (S. of The Hague) and the region between Haarlem and Leyden.

In the 1930s exports were 65 p.c. of imports, the difference being made good by shipping and trading and by investments abroad. Dutch economy, based on expert and technical skill and on international relations, was highly vulnerable and subject to international fluctuations, and in 1939 the number of unemployed rose to 500,000.

#### Post-war Economic Conditions

Damage suffered during the German occupation, 1940-45, as a result of deliberate destruction and plunder, was estimated at 11.4 milliards of guilders, i.e. 32.6 p.c. of the pre-war national wealth. The post-war economic situation was serious. Export to Germany, before the war the principal market for vegetables and dairy produce, had virtually ceased. The troubles in Indonesia, from which before the war 14 p.c. of the national income was derived, were another drag on recovery. A large part of investments abroad had been lost.

Drastic monetary measures in 1945 prevented inflation; a careful system of rationing of food and textiles (ended in 1949),

respected by the Dutch with comparatively little evasion, reduced inequalities between citizens. In 1946 only 37 p.c. of imports were covered by exports; in 1948, 54.2 p.c.

Closer economic cooperation with Belgium and Luxembourg (see Benelux in N.V.); the dollars the Netherlands received from 1948 under Marshall aid (see European Recovery Programme in N.V.), and the end of war in Indonesia (*q.v.*) were factors in her steadily improving situation.

**PEOPLE, LANGUAGE, LITERATURE.** This strange and relatively new country holds a pop. of (est.) 9,295,304. It is densest in N. and S. Holland, where are the largest cities. Nederlanders are, in the main, Frisian, Saxon, and Frank, much intermingled, but still clearly showing the several types. Frisians, solid in Friesland, have mixed with Franks in the W. maritime provinces, and in a less degree with Saxons in Groningen; otherwise, broadly, the S., W., and centre are Frankish, the E. Saxon. All three have a language in common, within which dialects vary. A distinct Teutonic tongue, it stands between English and German. Frisian, also a distinct Teutonic tongue, has a literature of its own, though it is spoken only in the countryside of Friesland.

#### Dutch and Flemish

The Dutch language (*Nederlands*) extends over the N. half of Belgium, where it is commonly called Flemish, although *Nederlands* is there, too, the official description. In the Middle Ages and 16th century the active centres of Netherlands civilization and literature were to be found there, in Ghent, Brussels, Antwerp, etc. It was only after the split brought about by the war of independence against Spain that the lead was transferred to the N. Many Flemish refugees from the provinces reconquered by Spain took an important part in the outburst of intellectual and artistic activity characteristic of the first century of Dutch independence.

As in painting, so in letters, the 17th century was the golden age of the Netherlands, with the historian Pieter Corneliszoon Hooft (1581-1647), the comic playwright Gerbrand Adriaanszoon Brederoo (1585-1618), and the great Joost van den Vondel (1587-1679) as its shining figures; besides whom stands the homely fabulist, Jacob Cats (1577-1660), popularly most influential at home and best known abroad. Willem Bilderdijk



(1756-1831) offered determined and impassioned resistance to the spirit of his age; a reactionary in his own day, he was later to be acclaimed the forerunner of the Calvinistic revival. The poets Christiaan Starling (1767-1840), Hendrik Tollens (1780-1856), and Pieter Augustus de Genestet (1803-61) were his contemporaries.

A magazine, *De Gids*, founded early in the 19th century, was an inciting force to a revival of letters; its great figure was Everhard Johannes Potgieter (1808-75), who believed in the resuscitation of the people by the modern liberal spirit as well as by the example of the glorious past. Later on he was assisted by Conrad Busken Huet (1826-86), who tried to raise the level of literature by a merciless comparison with literature abroad. Even more in opposition to the prevailing self-complacent mediocrity was the romantic and revolutionary Eduard Douwes Dekker (*q.v.*, 1820-87).

#### Influence of *Nieuwe Gids*

The *Nieuwe Gids* group—with whom the pioneer of the modern lyric, Jacques Perk (1859-81) was one in spirit—included the poet and critic Willem Kloos (1859-1938), and the pioneer writer of the naturalistic novel, K. J. L. Alberdingk Thijm ("Lodewijk van Deyssel," b. 1864). With its claim for art as the most individual expression of the most individual emotions, it has since inspired many movements and reactions. Albert Verwey (1865-1937), originally a member of the group, became a leader into quite different directions of philosophic reflection and social sense. The brilliant novelist Louis Couperus (1863-1923), the realistic dramatist Herman Heyermans (1864-1924), the idealistic poet Frederik van Eeden (1860-1932), who became an R.C., Herman Gorter (1864-1927), the poet who wrote *Mei*, immortal idyll of Dutch nature, and became a Marxist, the mystical poet P. C. Boutens (1870-1943), and the poetess of socialism and humanitarianism Henriette van der Schalk (b. 1869, married to the painter Roland Holst), were all, diverse as they are, stimulated by the *Nieuwe Gids*.

The movement coincided with a marked economic revival, and the mental activity, absence of which was so bitterly deplored by the great mid-19th century critics, has not since flagged in Holland, and extended into Flemish Belgium, where the priest Guido Gezelle (1830-99) had already written

religious and nature poems, and where now came August Vermeylen (1872-1945), an essayist of great intellectual force; and the great poet, a combination of sensuality and intellectualism, Karel van de Woestijne (1878-1930). Stijn Streuvels (1871-1945) depicted Flemish peasant life in his novels, while Felix Timmermans (1890-1946), the creator of the exuberant *Pallister*, was enthusiastically read in both Holland and Flanders.

Herman Teirlinck (b. 1872) was a versatile novelist and playwright. In Dutch litera-

peared for the most part under new names. The great organs of the cultivated classes, the *Algemeen Handelsblad* of Amsterdam (conservative liberal), and the *Nieuwe Rotterdamse Courant* (progressive) survived. The Socialist newspaper is *Het Vrije Volk*, the Anti-Revolutionary paper is *Trouw* (formerly *De Standaard*); *De Nieuwe Nederlander* is the organ of progressive, even Socialist, Protestant opinion, while the R.C.s have *De Tijd* and *De Volkskrant*. The majority of readers of Dutch newspapers are postal subscribers, a fact which consolidates the authority of newspapers as organs of political opinion.

Bearing significantly on the literature, art, and culture generally of the Netherlands is the fact that its language is little known beyond its own frontiers. As a result an unusually large number of its inhabitants speak, read, write, and even become authors in foreign tongues. Hence the exotic influences manifest in native literature and art, and a tendency to run after strange gods in both.



ture proper the most remarkable novelist of the period was Arthur van Schendel (1875-1946). Martinus Nijhoff (b. 1894), a poet of playful

sensitiveness, A. Roland Holst (b. 1888), a poet of nostalgic and apocalyptic imaginativeness, took little part in the battle of ideas. H. Marsman (1899-1940), the "vitalist" poet and critic, was drowned while trying to escape from France to England; the brilliant and mercilessly critical essayist Menno ter Braak (1902-1940) committed suicide when the Germans entered Holland. Slightly older than any of these, but flowering in poetry generally regarded as great only in the 1940s, was P. N. van Eyck (b. 1887), whose work is marked by a strong philosophic and mystical strain.

The press of the Netherlands was strongly affected by the Second Great War. Of the underground papers which tried to maintain themselves and take the place of organs suppressed because they had continued to appear under German control, the one of importance is the *Parool* of Amsterdam, the *Telegraaf* having been suppressed. Party papers reap-



Netherlands. Types from the southern provinces of the Netherlands. 1. A Zeeland village schoolmaster. 2. Unmarried girls from Zeeland. 3 and 4. Old Gelderland peasants

**EDUCATION.** Education is increasingly practical, and gains much from a zealous public interest. Attendance at school has been compulsory since 1900; the obligatory age is 6 to 13, and there is careful provision for continuation classes. Primary education is free where necessary. An eighth school year introduced just before the Second Great War had to be suspended owing to lack of room in the schools and of teaching staff

Education was the great bone of contention between the Liberals and the Protestant and R.C. parties during the second half of the 19th century. The state schools, which originated from the education law of 1806, were intended for all denominations, and any religious teaching that might offend the susceptibilities of any of the Christian sects or of the Jews was therefore barred. The confessional parties strove to obtain, first the liberty to found denominational schools of their own, next a state subsidy to maintain them. In 1918 at last, by agreement among all parties, Liberals and Socialists gave way to a claim which was founded on conscience, while Protestants and R.C.s abandoned their opposition to universal suffrage, and the constitution was revised accordingly.

Denominational schools are managed by their own boards which appoint the staff; they are supported completely by public finance and are subject to state inspection as to efficiency; teachers must be in possession of the qualifications prescribed by the state. The state schools, which at one time had a monopoly, now accommodate less than half the pupils in the country.

#### Higher Education

Intermediate education is given in professional, technical, trade, commercial, and industrial schools, and schools for special local and industrial needs. In the high (Higher Burgher) schools co-education is general.

When founded in 1863 the Higher Burgher schools with a five-years' course were not intended to prepare pupils for the universities. In the early part of the 20th century, however, it was arranged that their final diploma should admit to the faculties of science and of medicine, and today more than half the university students in those faculties come from the Higher Burgher schools. The certificate of the old-established gymnasium, or grammar school, found in all towns of any importance and having a curriculum with many hours devoted to Latin and Greek, is still required for entry to the faculties of law, theology, and literature.

The state universities of Leyden, founded in 1575, Groningen, and Utrecht, and the municipal university of Amsterdam, which dates from 1875, have faculties of law, medicine, theology, science and mathematics, literature, and philosophy. Utrecht has also a veter-

inary faculty. At Amsterdam there is also a Calvinist university and at Nijmegen an R.C. one.

The technical school at Delft now enjoys university status, as does the agricultural school at Wageningen.

**CONSTITUTION AND GOVERNMENT.** The constitution of the Netherlands has not grown gradually like that of England. During the French period (1795-1815) there was a radical breach with the federal and also with the oligarchic system of the republic. The first constitution of the independent kingdom (1814) retained centralisation, and assigned large powers to the sovereign. The most important revision was that of 1848, when parl. gov. may be said to have been introduced, while prov. and municipalities were given a larger measure of autonomy.

The sovereign, whose person is inviolable, is head of army and navy; the executive power is his. There exists, to advise the crown, a resuscitated historic body, the council of state (*Raad van State*); it has the influence of its individual members, but cannot interfere directly with government. It has some slight judicial powers, but its authority is confined to emergency. Another nominal link between the Netherlands present and past is the provincial states, now, except in respect of defence against river and sea, a purely administrative body. It is popularly elected, but not for political ends, although it, in turn, elects the senators.

#### The States General

Real legislative authority lies with the states general. It comprises two chambers, the first with 50 members, the second with 100. Members of the first, or senators, are elected by the provincial states, on special qualifications, for nine years, one-third retiring every third year. Expenses are allowed them, £2 per day, during session. Their function is to advise or control, not to initiate, legislation.

The 100 deputies in the chamber, as the second is generally known, are (under the Reform Act, 1919) elected for four years by the votes of all citizens of both sexes who have reached 23, on a system of proportional representation. Deputies are paid £500 annually in addition to expenses.

The chambers of the states general meet separately in the historic Binnenhof in The Hague, each under a president appointed by the crown on the nomination of the chamber itself, except for

joint opening and closing sessions, or when specially called together by crisis. The sovereign can dissolve either chamber, or both, at will; a new chamber must be formed within 40 days.

The permanent administration of the provs. is in the hands of a commissioner appointed by the crown assisted by a committee of deputies chosen by the provincial states from among themselves.

In each of the 1,110 communes there is a popularly elected council, which chooses aldermen (*Wethouders*) from its own number. They, with a burgomaster appointed by the sovereign, form the daily executive authority, with control over the communal police.

**DEFENCE.** Service in the army is partly compulsory, partly voluntary. Conscripts are chosen by lot. Total war strength could be raised to 500,000 men (1940). Inundation in "Holland's Fortress" round the citadel of Amsterdam plays a large rôle in the scheme of defence, even though in the Second Great War it was made useless by surprise air tactics (see Netherlands: Second Great War). Her armed forces were integrated with those of other Western Union powers in conformity with the defence plans developed under the North Atlantic treaty, 1949.

**JUSTICE.** Courts of justice comprise cantonal (100), district (23), appeal (5), and the high court at The Hague, the judges being appointed by the sovereign for life. Civil and criminal cases are tried in all courts. Dutch law has developed from the *Code Napoléon*.

**HISTORY.** More than one date may be given for the beginning of the Netherlands as a nation. The struggle for liberty of conscience and freedom from unjust levies had been going on already for 15 years when, on July 29, 1581, Holland, Zealand, Utrecht, Gelderland, Brabant, Flanders, and Overijssel formally abjured the sovereignty of Spain. These United Provinces were not recognized by Spain until the treaty of Westphalia, Jan. 30, 1648, by which time Groningen and Drenthe had been included in the confederacy, and Spain had reconquered most of Brabant and Flanders. The period just defined is that of the war of independence.

The great figure in this drama of creating a new power and a new kind of power in Europe was William the Silent, prince of Orange. When he appeared upon the scene, a youth at the court of Charles V, all the provs., both N.

and S., had emerged from a state of flux, under their several counts and bishops, as possessions or fiefs of the Spanish crown, inherited from Burgundy and Austria. Orange, embracing Protestantism, headed the revolt in them against the folly and fanaticism of Philip II and his agents, Alva in particular. Then followed the capture of Brill in 1572 by the "beggars of the sea," the sieges of Haarlem, Alkmaar, and Leyden, and other incidents of the struggle picturesquely, though not always accurately, described by Motley.

After the assassination, in 1584, of Orange, the fight was continued by his two sons as stadtholders: Maurice (1567-1625), the born soldier, and the politically wiser Frederick Henry (1584-1647). The N. provs. issued from it as the powerful Dutch republic — the Netherlands of today. The S. provs. remained the Spanish Netherlands, to become some 200 years later Belgium.

The power of the new republic was a fact long before its enemies acknowledged it. For it the 80 years of war were a period of unparalleled advance, in the empire of the sea, the expansion of commerce, the exploitation of trade and industries, and the arts of peace. The Dutch East India co. was founded in 1602, the West India co. in 1621. In 1609 was established the bank of Amsterdam, pre-eminent among such institutions. With the opening of the 17th century the Netherlands had already passed into its golden age.

#### Dissension and Jealousy

But there was present in it a canker of religious and political dissension which ate into the rich body. The jealousies of the provs. one of another were complicated by those of the towns. There were rival parties of union and secession, fierce contentions for peace and state rights as against war and central government. The quarrel between Maurice and John van Oldenbarnevelt, resulting in the execution of the latter (1619), was significant of the strain of opposing forces which had weakened the republic from the first, and were to cause its fall. The Netherlands, by the immense effort of its earliest days, was left like a boy who has outgrown his strength. Next to its unique physical conditions, this "fatal flaw" in its constitution is the most significant fact in Netherlands history.

In 1641 Frederick Henry's son, William, married Mary, daughter of Charles I of England. This

alliance consolidated the authority of the Orange family, and entangled the United Provinces in the meshes of foreign politics. During the minority of the third stadtholder, William, commercial rivalry involved the republic in the first naval war with England (1652-54).

The third William's troublous minority saw further naval wars, in one of which De Ruyter entered the Thames in 1667, and the formation of the triple alliance between England, the United Provinces, and Sweden. But the prince's tutor, the grand pensionary John de Witt, could not prevent a disastrous renewal of war with France, and he and his brother Cornelis were murdered at The Hague by an Orangist mob. Thereupon (1672) William was declared stadtholder. He proved a great general, and 1697 brought the peace of Ryswick. Meanwhile, in 1677, he had married Mary, daughter of James II of England; in 1689 he, with his wife, mounted his father-in-law's throne, and until his death in 1702 he was both William III of England and the third stadtholder of that name.

#### End of the Stadtholderate

The 18th century was for the Netherlands a period of steady decline. In the war of the Spanish succession (1702-13) the United Provinces shared Marlborough's victories, but were exhausted in the effort. An interregnum in the stadtholdership after the third William's death was followed in 1747 by the election of a cousin, and this fourth William married George II's daughter Anne. The peace of Aix-la-Chapelle (1748) left the Netherlands at a very low ebb. After eight years' regency of the widowed Anne (1751-59) her son William was appointed stadtholder. The old feud of the states against the united power which the stadtholder symbolised was resumed by the patriot party, which, following the French Revolution, welcomed the French in their country (1795). William, fifth and last of the stadtholders, thereupon fled to England.

The period following (1795-1813) was one of French domination. Its successive stages were recognition of independence to 1805; dictatorship of Napoleon through the grand pensionary, Rutger Jan Schimmelpenninck, 1805-06; Louis Napoleon's reign as king of an independent Netherlands, 1806-10; annexation by France, 1810-13. In 1813, after Leipzig, G. K. van Hogendorp established a provisional govern-

ment, which recalled the prince of Orange (the fifth William's son) not as stadtholder, but as sovereign. Thus the modern kingdom of the Netherlands came into existence.

After a brief reunion (1815-30) of the former Spanish Netherlands, the southern part rebelled and was in 1839 recognized by the powers as a separate country, Belgium. William I abdicated in 1840 in favour of his son, William II, who reigned until 1849. His son and successor, William III, lived until 1890, after which the queen-dowager, Emma of Waldeck Pymont, acted as regent until her daughter, Wilhelmina (b. 1880), ascended the throne in 1898. Wilhelmina married in 1901 Henry of Mecklenburg; their only child, Juliana (b. 1909), ascended the throne 1948 on Wilhelmina's abdication. By her husband Bernhard of Lippe-Biesterfeld, Prince of the Netherlands, (m. 1937) she had four daughters, Beatrix (b. 1938), heir presumptive, Irene, Margriet, and Maria.

**POLITICAL LOYALTIES.** Chiefly as a result of the struggle over the schools (see under Education), religion from the middle of the 19th cent. was the basis of Dutch party politics. The revised constitution of 1848 opened an era in which, under direct suffrage, the Liberals were in the ascendant. The R.C.s owed their emancipation in 1795 to the current of thought represented by Liberalism; while the reintroduction of the R.C. hierarchy in 1853 was directly due to the new constitution, and the Liberal ministry under Thorbecke (1798-1872) was driven from power for a while by an outburst of Protestant resentment. Soon, however, the R.C.s began to waver in their support of the Liberals.

#### Nineteenth Century Politics

At the same time, from the old Conservative party there detached itself a group of strict Calvinists, whose numerical strength was, until the suffrage was extended, "behind the electorate," among the lower middle class and peasantry, but who were led by a remarkable thinker, Groen van Prinsterer (1801-1876), and by landed aristocrats. This orthodox Protestant party, which gradually replaced the Conservative party, soon split in two: the Anti-Revolutionary party, composed mainly of members of the *Gereformeerde Kerk*, formed by orthodox secessions, 1834 and 1886, from the *Hervormde Kerk*, and the Christian Historical party, composed mainly of orthodox members of the

*Hevormde Kerk*, which in republican days had been the state church.

The school question led to the at first sight somewhat surprising coalition between the R.C.s and the two Protestant parties, of which Dr. Kuyper (1837-1920), the leader of the Anti-Revolutionaries, and the R.C. leader, the priest Schaepman (1844-1903), were the principal authors. Under Dr. Kuyper's premiership, 1901-1905, the tension between the "Christian" parties and the "paganists" ran high. When the school question was settled in accordance with the wishes of the confessional parties (1918), it was expected that cooperation between R.C.s and Calvinists would not last much longer. A Socialist party (founded 1894) was now an important element in the situation, and the R.C. party embraced progressive forces which seemed to make a re-alignment easy.

Social legislation, with which the last Liberal government of 1897-1901 had made a beginning, was now the great problem. Relations between the R.C.s and the two Protestant parties showed signs of strain; yet virtually the entire period between the two wars was filled by cabinets composed from among the three parties of the right. It was not until 1939 that a definite breach occurred between Dr. Colijn, the strongest statesman of those years, an Anti-Revolutionary of marked conservative leanings, and the R.C.s, whereupon a ministry was formed by a Christian Historical elder statesman, Jonkheer de Geer, into which, apart from R.C.s and others, Socialists entered for the first time. It was this cabinet which in 1940 took refuge in England (*see Netherlands: Second Great War*).

#### Post-War Developments

Of 51,012 persons arrested and charged with collaboration and other wartime crimes, Anton Mussert, made *Fuehrer* of the Netherlands by Hitler in 1942, and Max Blokzijl, who broadcast German propaganda from Hilversum, were executed on May 7 and March 15, 1946—the first executions in the Netherlands for 92 years. De Geer, who, after accompanying the govt. to London in May, 1940, returned without permission to the Netherlands in the following Sept., was found guilty of high treason in time of war and sentenced May 23, 1947, to a year's imprisonment and three years' probation.

During the war many entertained hopes that the sense of national unity promoted by the

German invasion would survive and break down the religious divisions dominating Dutch politics; and the first post-war cabinet was formed by Willem Schermerhorn, a resistance leader who was a strong advocate of a party without religious affiliations, supported by Willem Drees, another resistance leader and a Socialist. But general elections held in 1946 showed that the old divisions remained. The R.C. party, with 32 (out of 100) members, won most seats, and L. J. M. Beel, its leader, became prime minister, Drees, with 29, remaining in the cabinet.

New elections in 1948 gave the R.C.s again 32 seats, the Labour party 27, the rest being distributed as before among half a dozen other parties. By this time policy in Indonesia was another source of division; and Juliana insisted that the new cabinet should be broadly representative of the nation, in-

stead of a coalition of two parties only. After some difficulty, such a cabinet, led by Drees, was formed. It immediately drew up a bill, passed by the states-general in Sept., amending the constitution so that the Netherlands-Indonesian union could be set up; and in 1949, under United Nations pressure, carried into effect a settlement with Indonesia (*q.v.*).

The Netherlands was a party to the treaty of Brussels, 1948, and shared in later defence and other measures (*see Western Union*).

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## NETHERLANDS: SECOND GREAT WAR

F. S. Gerbrandy, Prime Minister of the Netherlands, 1940-45

*Prof. Gerbrandy tells vividly the history of the fighting in May, 1940, and of the resistance and sufferings of the Dutch people during the German occupation. For the fighting in the liberation of the south, see Europe, Liberation of; Schelde; Walcheren, etc.*

On May 26, 1937, the last pre-war elections for the second chamber of the states general were held. They proved a success for the leader of the Anti-Revolutionary party, Dr. Colijn, who formed a right-wing cabinet which continued in office until July 24, 1939.

A cabinet of the right meant one supported by the confessional parties, viz. the Anti-Revolutionary party, the Christian Historical union, the R.C. party, all of them with principles and programmes based on the foundation of a religious outlook on life.

A proposal, already accepted by the old chamber, to empower the govt. to take measures against extremist political parties (some thought of the Communists, some of the National Socialists) did not gain the majority of two-thirds of the votes cast as required by the constitution.

Internal division brought about the overthrow of the Colijn cabinet. It was succeeded by another Colijn cabinet, without a parl. majority, which gave way after a few days, and was followed on August 10, by a coalition cabinet formed by de Geer in which all the principal Dutch political currents were represented. The author of this article held a seat in that cabinet as an Anti-Revolutionary, without, however, the official

mandate of his party. Shortly after this cabinet came into office, the Second Great War broke out. The Netherlands was again confronted with the problem whether it should remain neutral or take sides. After the League of Nations lost all authority, Dutch foreign policy had tended towards neutrality (the policy of independence). A sudden change of direction was impossible. During a debate in the first chamber of the states general, the govt. as well as members of the chamber, including one of the most prominent, Professor Anema, asserted that to take sides was not imperative. At the same time, people as well as govt. were convinced that in the conflict already looming up, the Netherlands could not but side with Great Britain and France. The govt. made every effort to avoid even the semblance of being provoked by the Germans, but the German invasion, acutely imminent on Nov. 11, 1939, became reality on May 10, 1940.

The invasion had been prepared by fifth columnists, most of whom were non-naturalised Germans exercising their profession or carrying on their trade in the Netherlands; others were Dutchmen, members of the Dutch National Socialist party. For example, a house in The Hague

close to that of the writer proved on May 10 to conceal liaison agents of the Germans, arms, and wireless transmitting and receiving apparatus, which had escaped the keenly vigilant eye of police and secret service. In other places Germanophile persons rendered assistance to parachutists in accordance with instructions given in advance by the Germans. Disloyal elements proved to possess weapons, which they immediately brought to bear against Dutch troops. As a result certain points within The Hague became centres of hand-to-hand fighting between Germans and their collaborators and Dutch soldiers. The same thing happened elsewhere, e.g. in Rotterdam.

Diep near Moerdijk connects the E. and S. of the country with the territory within the so-called "waterline" (which checked Louis XIV in 1672); among all the bridges destined to be blown

both with German ground troops and with parachutists dropped to occupy airfields within the waterline. But neither the capture of Moerdijk rly. bridge nor the early loss of airfields within the water-



Netherlands. Scenes during the Second Great War. 1. Result of the overwhelming air bombing of Rotterdam, May 14, 1940, in which the heart of the city was demolished. The Groote Kerk alone stands up among the ruins. 2. Wieringerwerf (built on land reclaimed from the Zuider Zee), where the waters rose 20 ft. through the cutting of the dyke by the Nazis. 3. Victory parade in Utrecht, May 7, 1945, menaced by concealed Nazis who opened fire

Photo 1, *The Times*

Although the number of Germans in the Netherlands was far more than 100,000 (there was a considerable exchange of nationals between Holland and Germany as a result of years of commercial intercourse), the fifth column was small; its activities none the less were intensive. In several instances Dutch members of the National Socialist movement appeared wearing German uniforms. In the W. of the country the long rly. bridge over the Hollands

up, this was the main one. German parachutists were dropped there very early in the morning, and frustrated the blowing up of this approach to the heart of Holland. Consequently the cities of Dordrecht, Rotterdam, Delft, The Hague, situated within the waterbound area, became unprotected from the moment the enemy succeeded in breaking resistance in the S.E., and very soon after the invasion from the E. fighting occurred within the "waterline,"

line was the decisive factor in the development, which, except in the S.W. of the country, where resistance was kept up for another week, led to collapse after five days' fighting; for within the waterline resistance against the advancing Germans coming across the Moerdijk bridge continued to the end and the airfields lost on the first day were, except one (Waalhaven, near Rotterdam), recovered by Dutch troops within 24 hrs. The decisive factors were German superiority in the air, the German break through the Grebbe line, the bombing of Rotterdam. Despite desperate efforts during the year and a half preceding the outbreak of war, the Netherlands had not been able to bring its air force up to strength. Holland possessed about 200 aeroplanes, and those did exceedingly well—in two days, together with A.A. artillery, they shot down more than 180 German planes—but after that the air battle was over. To the E., before the waterline proper, lies a second waterline including a part (near the Grebbeberg) lying above inundation level. The Grebbe line had originally been intended as a second line of defence (after the Yssel line farther E.), the waterline proper being the third. German strategy forced the Grebbe line to function as the definite line of resistance. Furious battles took place there, thousands of Germans being killed, but their onslaught proved irresistible. Nor did the Germans succeed in



forcing the dyke shutting off from the sea the former Zuider Zee.

The bombing of Rotterdam, which reduced acres of the heart of the city to ashes, proved that Holland's big cities were bound to be destroyed if the battle were continued, on account of the smallness of the country.

On Whit Sunday, May 12, 1940, the cabinet warned the queen that the moment was approaching when a move from The Hague must be made. Very early in the morning of the 13th, Gen. Winkelman, c.-in-c. of land and sea forces, indicated that the departure from The Hague of the queen and the cabinet was inevitable that very day. Before the morning was over, the queen left for The Hook, where two British destroyers lay ready at need to convey to England the queen, the ministers, the British ambassador, the chief civil officials, and other prominent persons. The cabinet left for The Hook of Holland in the afternoon. Their route ran through territory which was already the scene of skirmishes with the enemy. The queen had departed in the first destroyer, after being subjected to a bombing-attack; in the evening of that day, the cabinet followed, the minister of War having advised them to wait no longer. The plan to go to the S.W. of the country, where resistance could be protracted, had to be abandoned. That the queen did not leave too early is indicated by the fact that she arrived in London at the moment that Rotterdam, of which The Hook is the coastal port, was being bombed. German parachutists had already tried to take the royal palace at The Hague. Later documents have shown that the Germans intended if possible to capture the royal family and the ministers of foreign affairs and of justice.

#### German Brutality

After the capitulation came the German occupation. In its full depth the nature of the occupation can be felt and described only by one who has actually endured it. During the occupation 105,000 Dutch Jews were murdered, more than 2,000 people of the resistance movement were executed, many more were tortured; between 10,000 and 20,000 Dutch died in concentration camps in Germany, more than 4,000 in the Netherlands; 25,000 to 30,000 Dutch civilians were starved to death, 90,000 Dutch people are still missing; enormous

stretches of grass and arable land were damaged by deliberate inundation with salt or fresh water; 380,000 young men, of whom 33,000 did not return, were transported to Germany to work for the German war machine, many of them dragged away like cattle; thousands of millions of capital were stolen, certain parts of cities (e.g. part of the S.W. of The Hague) were pulled down without reason; valuables worth millions were transported to Germany, countless factories were dismantled and transferred to Germany, as a result of which the lack of machinery after the liberation was worse than in any other country of Europe.

#### Manifestations of Resistance

Resistance started on May 15, 1940, the day on which the Germans had conquered the whole of the country. It was thus instantaneous. It had many aspects, according to the circle within which it manifested itself. The churches resisted by proclamations, made by a particular body or in common by all, and read from the pulpit all over the country on the same day. The proclamations on the pogroms and the deportation of Dutch civilians were particularly moving.

The schools, notably the denominational schools, insisted on maintaining their right to determine the nature of the school programme, to appoint and discharge the teachers, to maintain the national character of the education they gave. Like the clergy, many teachers paid for that battle with their lives. The physicians developed so massive a resistance that the Germans had to give in; the protest made by this group when in Nov., 1944, young men were dragged away from Rotterdam and elsewhere as slave labour is another moving document against the oppressor.

750 illegal papers were published; at first they were cyclostyled, later printed. The best known, e.g. *Vrij Nederland*, *het Parool*, *Trouw*, several of them with hundreds of thousands of readers, continued to appear after liberation though the unity which characterised them during the occupation soon disappeared.

The principal resistance organizations were (1) *The Ordedienst* or O.D. (order service) which was under military discipline, had a special character in each province, and aimed in particular at having ready an organization to maintain order at the moment

of the liberation. In the autumn of 1944 the local O.D. at Middelburg intimated to the advancing British troops through its well-organized telephone and radio service that, although they had abandoned the scheme, they could occupy the town, all treacherous elements having been locked up.

(2) *The Landelijke Organisatie voor Hulp aan Onderduikers* or L.O. (rural organization to help "divers") which provided safe accommodation and sustenance for one million civilians who had risked their lives out of a total of nine millions in a country where the Germans controlled the entire rationing machinery. The gossamer network of organization, the devotion, the minute falsifications involved in this work in the small, flat, densely populated Netherlands, can scarcely be imagined. The primary aim of this organization entailed all sorts of other tasks.

(3) *The Knokploegen* (K.P.) (knuckles gangs) which charged themselves with the liberation of arrested people, the destruction of population registers, etc. One left-wing group burned the Amsterdam population register, which upset German plans for deporting slave labour on the basis of this meticulous record.

(4) *The Raad van Verzet* (council of resistance), which formed an integral part of the Netherlands military forces of the interior, when these were formed.

#### Seyss-Inquart as Ruler

The K.P. gangs, always willing to venture upon the most dangerous undertakings, reflected the relentless resolution of the whole resistance. One relatively small group centred upon an illegal paper saw 170 of its members executed. In many cases the bonds between those who survived remained as strong as ever, and this spirit of the resistance, with its notable element of spiritual combat against the oppressor, found its way in many guises into post-war literature.

The Germans pretended that the Dutch were a somewhat neglected part of the great German nation, and they took measures in the Netherlands which were taken neither in Belgium nor in France. The Netherlands came not only under military, but also under civil administration, which was placed in the hands of Seyss-Inquart, one of the most abominable but most able of the Nazi leaders. At first he tried to win the people, but as he did not

succeed, he took measures gradually increasing in mad severity. The Germans wanted to make it clear to the Dutch people that if they did not wish to be what they were, *i.e.* part of Germany, they were destined totally to disappear. Documents discovered after the war prove the Germans' intention to transfer most of the Netherlands population to the E. of Europe.

The suffering of everyone was intense. Indescribable misery in the form of starvation was caused during the winter of 1944-45, especially for those who lived in the N.W., which remained unliberated to the last moment. This winter will be recorded in history as an unprecedented calamity. Thousands on the brink of starvation roved *e.g.* from Amsterdam to Wieringermeer, from places in the S. right across the country to the E.; some saw the food they had collected from the farms looted by the oppressor at the very last moment, some never returned. Other countries of the world know calamities as great. But this catastrophe befell a land that until shortly before the war had lived in comparative luxury, and it was caused by the deliberate act of the German oppressor, who took vengeance for the general strike of all railwaymen in the Netherlands which began on Sept. 17, 1944, at the suggestion of the exiled government in London. The railwaymen did not return to work until the oppressor had capitulated.

An Allied attack from the S. towards the North Sea must, it was decided, be made only in extreme emergency, as it might result in the total destruction of the most thickly populated, most highly industrialised and prosperous part of the country which includes the cities of Amsterdam, Alkmaar, The Hague, Rotterdam, Utrecht, Haarlem, Leyden, and Delft. Deputies of the underground movement and the Netherlands government in London agreed to call on the British government to come to the aid of the starving people. Strong action taken by Winston Churchill after consultation with President Truman led to the charging of Gen. Eisenhower with the order to compel the German occupation forces not to resist relief work. The dropping of food parcels by the R.A.F. in the stricken area began on April 29, 1945.

On Sept. 3, 1940, the de Geer cabinet which arrived in London



Netley, Hampshire. Courtyard and main entrance to the Royal Victoria Military Hospital  
Orlbb, Southsea

on May 14 was replaced by the Gerbrandy cabinet, whose task was to continue the battle alongside the Allies outside the mother country, and to take up and maintain contact with the people of the conquered territories. After inaugurating battle in the Pacific with the declaration of war on Japan on Dec. 7, 1941, this cabinet continued in office until Feb. 24, 1945. A second Gerbrandy cabinet, coming into office immediately, included several persons from the liberated S. of the country, and after the German capitulation and the liberation of the whole country, May 5, transferred the seat of government once more to the Netherlands.

On June 23, six weeks later, the Gerbrandy cabinet, in conformity with its intention expressed long before, resigned. *See further Netherlands*, p. 6022.

**Netherlands Antilles.** Name adopted in 1948 for the overseas territory of the Netherlands formerly called Netherlands West Indies or Curaçao (*q.v.*).

**Netherlands East Indies.** Former name of the Netherlands possessions in the E. Indies, called since 1946 Indonesia (*q.v.*).

**Netherlands West Indies.** Collective name for the Netherlands Antilles (*see Curaçao*) and Surinam (*q.v.*).

**Nether Stowey.** Village of Somerset, England. Situated 9 m. W. of Bridgwater, it was 1796-98 the residence of S. T. Coleridge.

**Néthou, Pic de** (Sp. Aneto). Mountain peak of the Central Pyrenees, in the Maladetta group, between France and Spain; highest point of the range: 11,168 ft.

**Netley.** Village of Hampshire, England. It stands on the side of Southampton Water, 3 m. S.E. of Southampton, with a rly. station. Here are the extensive ruins of a Cistercian abbey, founded about

1239. In 1856 a military hospital, the Royal Victoria, was begun at Netley. It was opened in 1863 and became the largest on the peace-time establishment of the R.A.M.C. It has accommodation for 1,100 patients, and trains personnel of the army medical services. In the First Great War, it was used for Australian

forces based in Great Britain, and during 1943-45 it was occupied by U.S. army medical services. Pop. 1,500.

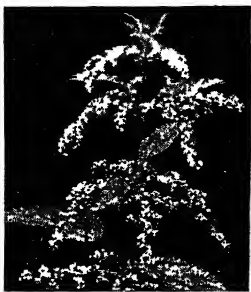
**Net Personalty.** Legal term to denote the total personal or movable property left by a testator, less any charges for debts which may lie against the estate. Personal property is defined as consisting of such items as money or goods, and such rights and profits as relate to these. Real property, which is distinct from net personalty, consists of land and buildings which are immovable.

**Net Price.** Term to denote the real price, not the nominal price without discounts, of an article. The net book agreement of 1899, still in operation, was the result of a move by publishers and booksellers to stop the practice of underselling then prevalent in sections of the book trade. "Net Books" are published at net prices and supplied to the retailer on condition that they are not sold to the public at less than that price within a specified period.

**Netsuké** (Jap., attached root). Toggle or button on a Japanese kimono. The kimono has no pockets, and the netsuké is used to attach a cord from which is suspended the wearer's writing-case, purse, and keys. The original netsukés were of carved cherry wood, but later ivory, coral, agate, marble, jade, ebony, amber and metal were used. On account of their elaborate carving—usually illustrating figures, animals, and fairy-tales—netsukés are collected by Europeans. A fake can be detected by its sharp edges, which would not be suitable for actual use, and the absence of wear at the sides of the holes.

**Nettle** (*Urtica dioica*). Perennial herb of the family Urticaceae. It is a native of the N. temperate

regions, S. Africa, and the Andes. The creeping rootstock sends out runners, soon forming a large colony. The oval or lance-shaped, opposite leaves are downy and well furnished with stinging hairs; the edges strongly toothed. The flowers are small and green, the males being in separate, looser clusters than the females. A smaller annual species (*U. urens*) has smooth leaves with stinging hairs, and the clusters few-flowered. Another annual is the Roman nettle (*U. pilulifera*), a coarser-looking plant, whose leaves, save for the stinging hairs, are also smooth. The Australian tree nettle (*U. gigas*) grows to a height of 100 ft. or more. Nettle-shoots in spring make a valuable pot-herb, and a green dye is obtained from the leaves. Several species of nettle are employed in the manufacture of textiles and ropes.



Nettle. Foliage and flowers of common stinging nettle

**Nettle-rash or URTICARIA.** Affection of the skin which occurs in the form of weals or raised patches, at first red and afterwards white and bloodless in the centre, but red at the edges. The condition is more frequent in children than in adults and in females than in males, and is more frequently seen in warm than in cold weather, probably owing to the greater frequency of eating decomposed food and too much juicy fruit, which carries off calcium from the blood, allowing the serum to escape through the vessel walls, thus causing the itching weals. Urticaria may be due to local irritation, such as stings of nettles, insects, jellyfish, etc.; to the eating of unsuitable food, perhaps shell fish, tinned fish, and pork; to the taking of certain drugs; to intestinal parasites; or it may be associated with certain diseases affecting the blood stream, such as diabetes or jaundice.

A saline purgative should be given, anti-itch preparations applied, anti-allergic substances taken, and drugs of the adrenalin family used to shrink the vessels. See Itch.

**Nettle Tree (*Celtis australis*).** Tree of the family Ulmaceae, a native of S. Europe. The oval, lance-shaped leaves are alternate. The small, greenish flowers are succeeded by small, berry-like

fruits, which are black when ripe and very sweet. In Greece they are known as honey-berries. The wood is dense and hard.

**Nettuno.** Italian resort, 31 m. S.S.E. of Rome. Here was anciently a temple of Neptune, hence the name. Pop. est. 3,000.

During the Second Great War British and U.S. troops of the 5th army landed on Jan. 22, 1944, near Anzio (*q.v.*), the port of Nettuno, a position some 60 m. behind the German front line on the Garigliano. The next day Nettuno was captured, and the Appian Way brought within range of Allied artillery.

**Neuchâtel.** Lake of Switzerland. It runs N.E. and S.W., between the cantons of Fribourg and Neuchâtel, and touches those of Berne and Vaud. Its extreme length is 24 m., average breadth 4 m., alt. 1,427 ft., depth 500 ft., and area 92½ sq. m. The surplus waters of Lake Morat are carried to it by the Broye, while it discharges its own by means of the Thiele through the lake of Bienné to the Aar. The towns of Neuchâtel, Grandson, Yverdon, and Serrières stand on its banks.

**Neuchâtel.** Frontier canton of N.W. Switzerland. Traversed by the Jura Mts., it is bounded N.W. by France, N.E. by Berne, S. by Vaud, and S. and E. by the lake of Neuchâtel. It is divided into three regions, viz. Le Vignoble, bordering the lake, with an alt. of from 1,500 ft. to 2,300 ft.; Les Vallées, 2,300 ft. to 3,000 ft., and Les Montagnes, a valley in which stand La Chaux de Fonds and Le Locle.

In the lowest area the vine is cultivated, in the Val de Travers (*q.v.*) is a noted asphalt deposit. Cattle-rearing and cheese-making are engaged in, and there are stone quarries. The manufactures are of watches, electrical appliances, screws and knitting machines, and soft goods. The principality was under the kings of Prussia from 1707 to 1857, except for the period 1806-14, when it was French. In

1815 it entered the Swiss confederation, becoming a full member in 1857. Area, 312 sq. m. Pop. 117,900.

**Neuchâtel** (Ger. *Neuenburg*). A town of Switzerland, capital of the canton of Neuchâtel. It stands at an altitude of 1,300 ft. on the N.W. shore of Lake Neuchâtel, 27 m. by rly. W. of Berne. Fine quays with handsome modern buildings line the lake shore, this new quarter having several public gardens. The old town, to the W., contains a castle of the 12th cent., with later additions; an abbey church, built in the 12th cent., now used for Protestant worship; and a Renaissance market hall, erected in 1570. There are a university, museums, picture galleries, libraries, a school for watchmakers, and many other educational and philanthropic institutions. Neuchâtel has a considerable trade in wine, and manufactures watches, chocolates, jewelry, and printed goods. The in-



Neuchâtel, Switzerland. Hotel de Ville of this town on the shore of Lake Neuchâtel

habitants are mainly French-speaking Protestants. Pop. 23,799.

**Neue Freie Presse.** Formerly Austria's leading daily paper. It was founded in 1864 by Max Friedländer and Michael Etienne, and later published by the Benedict family. It appeared twice daily (12 times a week), was liberal in its political trend and well informed on economic affairs. Its circulation varied from 50,000 to 100,000. It was abolished by the Nazis immediately after the Anschluss of March, 1938.

**Neues Wiener Tageblatt.** Viennese daily paper. It was founded in 1867, and belonged in its later years to the Steyermühl combine, then the biggest paper-making, printing, and publishing enterprise of Austria. Progressive in its views and with the largest circulation in the country, it maintained a high standard and had its own world-wide news service. It was abolished after the Anschluss of Austria and Germany in 1938.

**Neuilly, TREATY OF.** Treaty signed at Neuilly-sur-Seine, Paris, between Bulgaria and the Allied powers, Nov. 27, 1919. By it Bulgaria ceded small portions of territory on its W. frontier to Yugoslavia and lost a large part of Thrace, on the Aegean Sea. The Dobruja, given to her by the treaty of Bukarest, 1918, was restored to Rumania, and in addition she had to demobilise her army, surrender all arms and munitions of war, and carry out certain reparations conditions. See Bulgaria; Dobruja; Greece; Rumania; Thrace.

**Neuilly-sur-Seine.** Suburb of Paris. Lying E. of the Avenue des Champs Elysées and N. of the Bois de Boulogne, it is entered at the Porte Maillot and extends to the Seine. On the N. was a château of Louis Philippe, destroyed by the mob in 1848. Its midsummer fair is a great popular festival frequented by Parisians. Pop. 60,172.

**Neumann, FRANZ ERNST** (1798-1895). German scientist. Born at Joachimstal, Sept. 11, 1798, he made a study of the specific heats of compounds, as a result of which he formulated Neumann's Law in 1831, i.e. that "the molecular heat of a compound is equal to the sum of the atomic heats of its constituents." He also wrote treatises on the dynamical theory of light and other subjects. Neumann died at Königsberg, May 23, 1895.

**Neumünster.** Town of Schleswig-Holstein, Germany. It is situated between Hamburg and Kiel, 18 m. S. of the latter, and is an important rly. junction. It is an agricultural centre, and has valuable educational institutions, though the Heimat museum was totally destroyed during the Second Great War. It was originally called Wippendorf, but took its present name in 1163, after an Augustinian monastery which was established there. Pop. (1950) 70,400. After May, 1945, it lay within the British zone of occupation.

**Neuquén.** Territory in the W. of Argentina. It is bounded N. by the river Colorado and S. by the river Limay. Sloping E. from the Andean system, it is traversed by the river Neuquén, an affluent of the Rio Negro, and is almost wholly mountainous. There are several large lakes in the S. portion, including Nahuel-Huapi (*q.v.*). On the lowlands numbers of cattle, sheep, and horses are reared. Chosmalal is the capital. Area 37,245 sq. m. Pop. est. 35,000.

**Neuralgia.** Affection of the nerves. It may be a manifestation of a neurasthenic state, or due to

debility, anaemia, exposure to cold, toxic influences, as in gout, diabetes, lead poisoning, malaria, etc., pressure on a nerve trunk from a tumour, or to reflex action from a source of irritation, such as a decayed tooth. Women are more often affected than men. An attack may begin with sensations of discomfort or tingling in the part affected, but often the pain comes on quite abruptly. It is usually very severe, and is described as stabbing, burning, or darting in character.

In the treatment of neuralgia the general health should be built up, and for anaemic or debilitated patients a change of air is often necessary. Sufficient exercise in the open air and a generous diet rich in the whole range of vitamin B are important. All sources of sepsis and of peripheral irritation, such as decayed teeth, should be looked for. Warmth applied by hot-water bags or heated layers of flannel to the affected part often relieves painful attacks, as does short-wave therapy. The nature of neuralgia is not understood. Even after the most violent and prolonged pain there is no change in the microscopic appearance of the nerve, which seems to serve merely as a conducting mechanism. See Nervous System; Sciatica; Tic Douloureux.

**Neurasthenia.** Term used popularly to include all forms of neurotic disorder or neurosis (*q.v.*). Physicians, however, now restrict the term to nerve exhaustion, which may result from prolonged physical strain and hardship, or may be the result of long-continued overwork, especially if associated with business or domestic worries. The most characteristic symptom of neurasthenia is the extreme readiness with which the individual is fatigued by physical or mental effort. Other symptoms are sleeplessness, constipation, and sometimes pain in the back and limbs, irritability, and depression. The best form of treatment is mental and physical rest. In severe cases the Weir-Mitchell (*q.v.*) treatment may be adopted.

**Neurath, KONSTANTIN VON** (b. 1873). German politician. Born at Tübingen, 1873, he graduated in law from Berlin university and entered the diplomatic service, being appointed vice-consul in London in 1903. He was councillor at the Constantinople embassy 1914-16, private secretary to the king of Württemberg 1917-18, and minister to Denmark 1919. He was appointed ambassador to Italy in

1921, and to Great Britain 1931-32. He became foreign minister in von Papen's govt. in 1932, retaining his



K. von Neurath,  
German politician

portfolio when Hitler became chancellor in 1933. He represented Germany at the five-power conference on armament equality at Geneva in 1932, and advised Hitler

to withdraw from the conference. In 1938 Ribbentrop replaced him as foreign minister and he became president of the Reich privy council. Following the German occupation of Czecho-Slovakia, he became Reich protector of Bohemia and Moravia in March, 1939. He introduced there Nazi racial laws, abolished trade unions and political parties, and when the Second Great War broke out harnessed Czech industry to the German war effort. He had, however, intervened with the secret police on behalf of many Czech students arrested after the occupation of their country, and in 1941 he was recalled for having been "too lenient," and sent into compulsory retirement. In 1943 he re-emerged as a general of S.S. Listed as a war criminal, Neurath was arrested by French troops in the closing days of the war in Europe and brought to trial before the international court at Nuremberg. He was found guilty on all counts, but the court recognized mitigating circumstances, and, on Oct. 1, 1946, he was sentenced to 15 years' imprisonment.

**Neuritis.** Inflammation of the trunk of a nerve. It may be localised in one nerve or may be multiple. Localised neuritis is most often due to exposure to cold, injury of a nerve, or extension of inflammation to a nerve from adjacent inflamed tissue. The symptoms are pain in the course of a nerve, and perhaps slight reddening and swelling of the part affected. The functions of the muscles supplied by the nerve are impaired, and there may be some loss of sensation in the skin to which the nerve is distributed. If the condition becomes chronic, there is ultimately extreme wasting of the muscles, with paralysis and possibly contractions.

Multiple neuritis may occur in the course of infectious diseases such as leprosy, diphtheria, and smallpox, may be due to poisoning by alcohol, lead, arsenic,

mercury, and other substances, or may arise in the course of beriberi. In acute multiple neuritis there are constitutional symptoms, such as rise of temperature and headache, with pains in the limbs. Paralysis of the legs and arms appears, with rapid wasting of the muscles. Most patients recover, though improvement may be slow and the paralysis may continue for a year or even longer. Alcoholic neuritis is the most frequent form of multiple neuritis.

In neuritis due to acute poisoning the outlook for recovery is usually good, but the prognosis in neuritis due to long-standing chronic lead-poisoning is not hopeful. Rest is an essential feature of treatment, and in acute cases the patient should remain in bed. Hot applications may be used to relieve pain, and short-wave therapy may be helpful. The cure is the cure of the cause.

**Neuroma.** Tumour which develops on nerve fibres. True neuromata consist of nerve tissue; false neuromata of fibrous tissue. See Tumour.

**Neuron.** Nerve cell. A typical neuron consists of a cell body containing a nucleus, and various fine processes which break up into smaller branches called dendrons. In many cells one of the processes is of great length and forms a nerve fibre, which, with other fibres, constitutes a nerve. The nerve fibre itself breaks up into small branches which are distributed to muscle, skin, and other tissues.

**Neuroptera** (Gr. *neuron*, nerve; *pteron*, wing). Order of insects undergoing complete metamorphosis and bearing two pairs of net-veined transparent wings which are closed roof-like over the body when at rest. The wings of one side are closely alike in size and shape; the antennae are rather long and thread-like and there are no cerci. Both the larvae and adults are carnivorous, preying chiefly upon small insects. There are 60 British species which include the Alder-flies (*Sialis*), Snake-flies (*Raphidia*), Lacewings (*Chrysopidae* and *Hemerobidae*). In the tropics the Ant-lion flies (*Myrmelion*) attain a large size. No species is injurious to man. Consult British Neuroptera, Killington, 1936-37.

**Neurosis.** Disorder of the mind not associated with any recognizable organic changes, and distinguished from insanity by the fact that it affects chiefly the emotions, and leaves the reasoning powers relatively unimpaired. There are

borderline cases in which it is difficult to diagnose between a neurosis and the early stage of some mental disorders. Understanding of these disorders has been much advanced during the 20th century.

Psychologists now classify neurotic disorders into two main groups, according to their mode of origin, i.e. the "actual" or "true" neuroses, and the psychoneuroses. The essential difference between these sub-groups is that the cause of the actual neuroses can be traced ultimately to some physical disturbance, whereas the psychoneuroses have a purely mental origin and are the last links in a chain of mental processes. The actual neuroses are of various types, and include neurasthenia, anxiety neurosis, and hypochondriasis. Anxiety neurosis is characterised by sudden attacks of acute fear which occur without any cause, and which the patient himself recognizes as being entirely unreasonable. Those who suffer from this disorder have frequently not been able to find a satisfactory outlet for their emotions, either as a result of social circumstances or deliberate suppression. An understanding of the cause of the condition is very helpful to them.

The psychoneuroses are hysteria, psychasthenia, and obsessional neurosis. These conditions are caused by a conflict between the conscious and unconscious parts of the mind. Despite his civilization, man still shares with the lower animals many fundamental tendencies and desires, gratification of which is often in direct conflict with the social teaching and the moral and ethical code to which the individual has been obliged to conform from early childhood. The result is that these wishes are either never allowed to reach consciousness or, if they do, are at once repressed by the individual. Freud has shown that in his development the child passes through a series of emotional phases before maturity is reached.

The exigencies of civilization demand that everyone must experience this process, and most people go through it successfully, i.e. they make the suppressions and repressions necessary to fit them to their environment. Sometimes, however, the suppression is not complete, or the unconscious desire tends to become too strong for the inhibiting forces. The result is that symptoms appear which represent a compromise, and it is these which constitute the neuroses. Treatment consists in investigating the

patient's mind and ascertaining the fundamental nature of the conflict which, unknown to himself, is occurring. This process is called by Freud psychoanalysis.

The normal mechanism of repression sometimes fails to deal adequately with the root causes of neurosis, and punishment symptoms become obvious, e.g. a hysterical paralysis, which cripples a soldier and prevents him from remaining at the front.

**Neuruppin.** Town of Germany, in the *Land* of Brandenburg. It is near the lake of Ruppín, and is situated 30 m. N.W. of Berlin, in a wooded and hilly countryside. It is a rly. junction and is on the Ruppín canal. It had a 13th century church, many fine 18th century buildings, and possessed a school founded in 1365 and many other educational institutions. It was a centre of the manufacture of brushes, leather and iron goods, and was originally established as a town in 1256, and reconstructed by Frederick William II in 1787 after a disastrous fire. After the surrender of Germany in May, 1945, it lay in the Russian zone of occupation. Pop. (pre-war) 21,635.

**Neusalz** (Pol. Nowa Sól). Town and river port of Silesia, under Polish administration since 1945. Situated on the Oder, 75 m. N.W. of Breslau, Neusalz is an old town, having a R.C. church built in 1597. Industries were yarn-spinning, iron, soap, and paper manufacture. Pop. (pre-war) 16,935; German inhabitants were expelled after 1945.

**Neusatz.** German name of the Yugoslav town Novi Sad (*q.v.*).

**Neuse.** River of North Carolina, U.S.A. Rising in the N. portion of the state, it flows 300 m. S.E. to Pamlico Sound, which it enters on the W. side by a wide estuary about 35 m. long. It is navigable for vessels of light draught for nearly 70 of its 300 m.

**Neusiedler See.** Lake of Central Europe. It is crossed by the frontier between Austria and Hungary, and is known to the Magyars as Fertő. The lake is so shallow that its size fluctuates, and in 1865 it dried up completely. The E. side is low and marshy and surplus waters flow away here by the Rábnitz to the Raab and Danube. When the bed is exposed remnants of lake dwellings are visible. The swamps at the S.E. end have been partially reclaimed.

**Neuss.** Town in the German Rhineland. Near the junction of the Erft with the Rhine, 4 m. W. of Düsseldorf, it was a pre-Roman



Celtic settlement and the Roman Novesium. A Benedictine abbey of the 9th century became later a seat of the archbishops of Cologne. The 13th century church of S. Quirinus, badly damaged in the Second Great War, marks the transition from Romanesque to Gothic. The Renaissance town hall (1638), the arsenal, and the museum were destroyed in that war, and remnants of fortifications deserve mention. Neuss had important engineering, soap, chemical, paper, and food industries, and as an inland port handled up to 4,000 vessels and a million tons a year. Pop., pre-war, 55,971. *Pron.* Noyce.

The U.S. 9th army reached the Rhine at Neuss, capturing it March 3, 1945, after fierce street fighting. After the surrender of Germany it lay within the British zone of occupation.

**Neustadt** (Ger., Newtown). The name of 22 towns in Central Europe, most of them in Germany. The biggest is Neustadt an der Haardt, in the Palatinate, 25 mi. W. of Heidelberg. It was founded 1235, granted urban rights in 1275, and frequently conquered by the French, also by Spaniards and Swedes in the Thirty Years' War. Now an industrial town, with metal, engineering, textile, wood, and paper works, and a centre of the Palatinate wine trade, it has a huge Gothic church of the 14th century, a former theological seminary (1579), and a town hall (1743). During the Second Great War it was captured by the U.S. 3rd army March 21, 1945; after the surrender of Germany it lay in the French zone of occupation. The neighbouring Maxburg castle at Hambach (c. A.D. 1000) was the centre of German democratic demonstrations. Pop. 23,135.

Neustadt (Pol. Prudnik) on the Prudnik river, is 15 m. by rly. S.E. of Neisse. Built round medieval and 18th cent. remnants of a monastery, it had linen and leather industries, and a pop. of 17,892 before the Second Great War, during which it was captured by the Russians, March 22, 1945. It was in the area of Germany occupied by Poland at the end of the war. Neustadt near Coburg, with its old church where Luther preached, was a centre of the toy industry of Thuringia. It lay in the Russian zone after the Second Great War. *Pron.* Noystaht.

**Neustrelitz.** Capital town of what was formerly the grand duchy, and then up to 1945 the German state of Mecklenburg-Strelitz; now in Russian occupa-

tion. It was laid out early in the 18th century, in the form of an eight-rayed star around the palace (1726-31), a fine Renaissance pile with Greek elements. Parks, museums, a great library, monuments, and the nearby lakes are attractions in an essentially agricultural town, which has rly. and canal connexion with Berlin and the Baltic. Pop. (1950) 26,000.

**Neustria.** Name given to a Frankish kingdom which had an independent existence in the 6th-8th centuries. It was so called because at the time it was the newest conquest of the Franks. It was the western of two kingdoms, Austrasia being the eastern one, and was bounded roughly by the Seine, the Loire, and Brittany. After the union of the two kingdoms in the 8th century, the word Neustria remained for some time in use, but the district to which it applied was never exactly defined.

**Neutrality.** Term used in international law to denote the condition of a state when there is a war, and that state is not at war with either belligerent. It dates from the 17th century. The duty of a neutral, put generally, is to refrain from giving effective assistance to either belligerent—a duty which is construed ever more widely. Thus, a neutral must not, when a place is besieged, introduce supplies into that place, because that would be interfering with a military operation; nor may he grant loans or furnish munitions of war to either belligerent. Still less may he allow either belligerent to prepare on his territory warlike acts against the adversary.

A neutral ship which tries to break a blockade is liable to capture. A neutral state must not allow belligerent ships of war to use its harbours, except under stress of weather, and then only for a limited time and not to replenish armed stores. A belligerent must not march troops into or through neutral territory; and if soldiers of a belligerent, to escape capture, or even by mistake, overstep the border of a neutral state, the latter ought to compel them to surrender, and to intern them until the end of the war, such troops being bound to surrender if called upon. The real difficulty in time of war is to reconcile the claim of the neutral state to prosecute its lawful commerce with the claims of a belligerent who has control of the seas to establish a blockade of his adversary's ports and to intercept contraband of war. When great states make war, this virtually means

that a neutral can trade only as prescribed by the naval power.

In 1780 and 1800, during the naval wars, the Baltic powers proclaimed an "armed neutrality." They set up the doctrine of "free ships, free goods"—i.e. goods carried in neutral ships, even contraband, should not be liable to capture—which would have abolished the right of visit and search upheld by Great Britain. The Baltic ships were formed into convoys, protected by ships of war; but Great Britain carried her point, and visit and search was recognized as the law of the sea in time of war.

During 1936-39 Great Britain and France evolved the policy of non-intervention in respect of the Spanish Civil War. This went beyond neutrality and aimed at removing every possible ground of provocation that might lead to being involved in the war. The U.S.A. adopted a similar policy (embodied in the Neutrality Act of 1937) designed to keep her out of any war in Europe.

The covenant of the League of Nations and the United Nations charter introduced a new conception of neutrality. In any war today one of the belligerents will be at war contrary to its international obligations; and other members of the community of nations will be entitled to take reprisals against that belligerent and to allow the other belligerent to do acts which are not in accordance with the old conception of their duty as neutrals. This change was illustrated in the Second Great War when the U.S.A. transferred 50 destroyers to the U.K., and by the Lend-Lease Act, 1941. *See* Angary; Contraband; International Law; Non-belligerency.

**Bibliography.** *Studies in International Law*, T. E. Holland, 1898; *International Law*, G. Schwarzenberger, 1945; *International Law*, 2 vols., Oppenheim, 8th ed. 1947.

**Neutrino.** Atomic particle. Its existence was suggested by Pauli to account for the continuous distribution of energy and for the conservation of energy in nuclear processes. He suggested that both the electron and the neutrino are emitted by the nucleus in a  $\beta$ -ray disintegration. Study of the energy distribution of the  $\beta$ -rays emitted by a radio-active substance had led to the conclusion that, unless the principle of the conservation of energy was to be abandoned as applied to internuclear processes, the emission of a  $\beta$ -particle must be accompanied by the simultaneous emission of another particle.

This latter, neutrino, was assumed by Fermi to have zero mass, to be uncharged, and to have a spin of  $\frac{1}{2} \left( \frac{h}{2\pi} \right)$ , where  $h$  is Planck's constant. Since the neutrino has a mass probably smaller than that of the electron, and no electric charge, there is no present possibility of making observations on it.

**Neutron.** Fundamental heavy atomic particle of zero charge. Its mass is slightly greater than that of the hydrogen atom. As it is uncharged the neutron is affected only by atoms at very close range, and so can pass through thick layers of heavy elements with little loss of energy.

**Neuve Chapelle.** Village of France, in the dept. of Nord,  $8\frac{1}{2}$  m.



Neuve Chapelle. Memorial to those Indian soldiers who died in France in the First Great War, and who have no known graves

S.W. of Armentières. It gives its name to an important battle of the First Great War. The old village was almost destroyed in the war.

The battle was fought between British and Germans, March 10-12, 1915. Sir John French, British c.-in-c., determined upon an attack to prevent the dispatch of German reinforcements to the E. front and to assist the French at Arras. The point selected was Neuve Chapelle, which had been on the German side of the line from Oct., 1914. The assault was made by the 4th corps, under Rawlinson, from the N., and the Indian corps, under Willcocks, from the S., with the 3rd and 1st corps making holding demonstrations to the N. and S. respectively. The German front was held by the 6th army. In spite of inadequate British munition supply, enough had been accumulated for a violent 40-minute bombardment by 480 guns. The R.F.C. secured decided local superiority in the air.

The bombardment opened at 7.30 a.m., March 10, and airmen bombed rly. bridges and junctions to the German rear. The infantry advanced at 8.5. The Indians carried four lines of trenches and en-

tered the village. To the N. the 4th corps found the artillery had been less successful in preparing the ground, and losses were heavy; but they also reached the village, where all resistance was ended by 11 a.m. The plan now required a further advance E. to drive a deep wedge into the German front before the Germans had recovered from the initial surprise. But this was held up for some hours by the late arrival of reserves, through faulty staff work. The Germans were able to take up strong positions, and the attack came to a standstill after about 1 m. of ground had been gained and the Neuve Chapelle salient cleared.

A renewal of the attack was ordered on the 11th, but the order did not reach all units; and an attack by units of the Indian corps was beaten back with heavy loss. By March 12 German reserves had arrived to deliver a number of counter-attacks, though no ground was regained. British casualties were 2,527 killed, 8,533 wounded, 1,751

missing. German losses were almost as large. On the section captured by the Indians 2,000 German dead were counted. A shrine in memory of Indian soldiers was unveiled at Neuve Chapelle in 1927.

**Neuwied.** Town of Germany, 8 m. N. of Coblenz on the right bank of the Rhine, where it is joined by the little river Wied. The chief building is the palace, once the residence of the princes of Wied, which stands in a large park. The chief industries are the manufacture of soap, tobacco, and various iron and engineering products. A feature of the place is the Moravian colony, to one of whose schools here George Meredith was sent as a youth. In the little county of Wied, Neuwied was founded by one of the counts (later princes) of Wied in 1653, and was made their residence. There had been a village here named Langendorf. Pop. (1939) 21,875.

**Neva.** River of N.W. Russia, in the region of Leningrad. Rising in Lake Ladoga, it flows S.W., then N.W. through Leningrad, and, dividing into several branches, discharges itself into the Bay of Neva in the Gulf of Finland. It

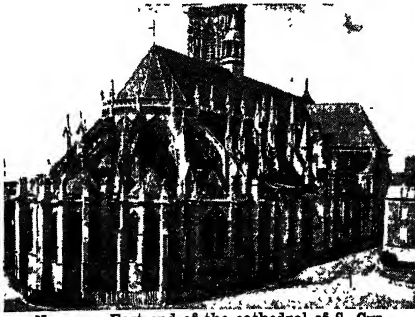
is an important commercial waterway, the final link in the communication between Leningrad and the White and Caspian Seas. Length 45 m.

**Nevada.** Western state of the U.S.A. Lying almost entirely within the Great Basin, a plateau at the foot of the Sierra Nevada and Wasatch mts., its surface (mean alt. 5,500 ft.) is marked by numerous small mountain ranges, between which lie tracts of marshy lands, converted at times into large lakes. Boundary Peak (13,145 ft.) in the W. is the highest point in the state. The principal river is the Humboldt, and the S. Pacific rly. follows the course of the river. Mining is important—the state includes the famous Comstock lode, long a rich source of gold and silver, as well as deposits of many other minerals; but its principal industry is dry-farming by means of irrigation. Forage crops, fruit, and vegetables are the principal crops. Cattle are raised, in particular on public lands, which form 87 p.c. of the state's area. The city of Reno (*q.v.*) has become notorious as a place for easy divorce: the state laws require no notice of a divorce suit, and only six weeks in which to establish residence. Las Vegas, in the S.W., is a gambling centre, accessible to Los Angeles and Hollywood by motor road. Boulder Dam (*q.v.*) is 25 m. S.E. of Las Vegas.

Nevada was part of the territory taken from Mexico in 1848. It became a state of the U.S.A. in 1864, and sends two senators and one representative-at-large to congress. For local affairs it has a state legislature of two houses. Its area is 110,540 sq. m., and its pop. (approx. one person per sq. m.) 110,247, inc. about 5,000 Indians. It is the most arid and least populous of the 48 states. *Consult* Desert Challenge: an Interpretation of Nevada, R. G. Lillard, 1942.

Nevada City, situated in California, 165 m. N.E. of San Francisco, is the co. seat of Nevada co.

**Nevers.** City of France. It stands where the Nièvre falls into the Loire, 32 m. from Bourges and 160 from Paris, and is the capital of the dept. of Nièvre. The cathedral of S. Cyr was begun in the 11th century and finished about 1500. It was originally two buildings, and is Romanesque at one end and Gothic at the other. The church of S. Etienne is noteworthy. The castle in which the counts and dukes of Nevers lived is now the palais de justice and a museum.



Nevers. East end of the cathedral of St. Cyriac

It was built in the 15th century, replacing an earlier edifice. Of the city's fortifications a tower remains. There are a town hall, a triumphal arch, and a number of old houses in the steep and narrow streets. The industries include potteries, tanneries, oil mills, iron foundries, and the making of boots and shoes. Nevers began as a Roman settlement. About 500 a bishopric was founded here, and about 1000 the counts of Nevers appeared, the county being known as the Nivernais. At one time in possession of the dukes of Burgundy, it was made a duchy about 1530. The last duke, a member of the family of Mazarini, died in 1798. Pop. 34,036.

**Nevill, Lady Dorothy Fanny** (1826-1913). British writer. She was born in London, April 1, 1826, daughter of Horatio Walpole, third earl of Orford (1783-1858). In 1847 she married her cousin Reginald Nevill (d. 1878), and became known as a hostess. She was author of *Mannington*

Lady Dorothy Nevill.  
British writer  
Elliott & Fry

and the *Walpoles*, earls of Orford, 1894; *Reminiscences*, 1906; *Leaves from the Note Books of Lady Dorothy Nevill*, 1907; *Under Five Reigns*, 1910. Died March 24, 1913.

Her third son, Ralph Henry, wrote *Life and Letters of Lady Dorothy Nevill*, 1919.

**Neville.** Name of an English family. Founded in the 12th century, it was connected with Durham, Northumberland, and Yorkshire. Ralph (d. 1367), 2nd baron, defeated and captured David Bruce at the battle of Neville's Cross, 1346. Another Ralph (1364-1425) became earl of Westmorland and married a daughter of John of Gaunt; while his daughters married leaders of the Yorkist

and Lancastrian parties. Ralph's grandson Richard, earl of Warwick, was the greatest figure in the family. Charles (1543-1601), 6th and last earl of Westmorland, took part in Northumberland's rebellion of 1569, was attainted, and forfeited his estates, including Raby Castle (q.v.). Junior branches of the family hold the titles of Aberbrooke (q.v.). See *Warwick Earl of*.

**Neville's Cross, BATTLE OF.** Fought between the English and the Scots, Oct. 17, 1346. During the absence of Edward III on campaign in France, David, king of Scots, invaded and ravaged the north of England. The English nobles, with the archbishop of York, marched to repel the invasion, and the two armies met at Neville's Cross, near Durham. The English archers opened the fight, and the Scots were defeated with heavy loss, their king being among the prisoners.

**Nevinson, Christopher Richard Wynne** (1889-1946). British painter. Son of H. W. Nevinson (v.i.), he was born in London, Aug. 13, 1889, and educated at Uppingham, the Slade school, and Paris. First exhibiting in London, 1910, he showed regularly with the

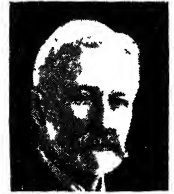
C. R. W. Nevinson,  
British painter

New English Art Club, and later at the Royal Academy, of which he became an associate in 1939.

An official war artist during the First Great War, he adapted the methods of Cubism to express the facts of mechanical warfare, a notable example being *La Mitrailleuse*, in the Tate gallery. Later he developed a more naturalistic style, and in the Second Great War painted notable studies of aircraft in flight. In 1927

H. G. Wells presented his painting *Studio in Montparnasse*, to the Tate. Nevinson published an autobiography, *Paint and Prejudice*, 1937. He died Oct. 7, 1946.

**Nevinson, Henry Woodd** (1856-1941). British writer. Born at Leicester, Oct. 11, 1856, he was educated at Shrewsbury, Christ Church, Oxford, and Jena university. He went to Crete during the Greek rebellion against the Turks, 1896, and his dispatches appeared in the *Daily Chronicle*. He later joined the staff of that newspaper. After reporting the Cuban war, he went to S. Africa, where he was in the siege of Ladysmith. He was leader writer to the *Daily News*, 1908-10, for which, with the *Daily Telegraph*, he was a war correspondent during the First Great War. His marked sympathy for the oppressed was combined with a sense of irony. President of the London P.E.N. in 1938, his publications included three autobiographical works, *Changes and Chances*, 1923; *More Changes, More Chances*, 1925; and *Last Changes, Last Chances*, 1928, and an astute study of the English character, *Rough Islanders*, 1930. He died Nov. 9, 1941.

H. W. Nevinson,  
British writer

**Nevis.** Loch or arm of the Atlantic Ocean in the S.W. of the co. of Inverness. It is a typical Scottish sea loch, 14 m. in length, and from 1 to 4 m. wide. See *Ben Nevis*.

**Nevis.** Island of the British West Indies, one of the Leeward group. It lies 2 m. S.E. of St. Kitts, with which and Anguilla (q.v.) it is administratively joined.

C. R. W. Nevinson. *Notre Dame de Paris*; an example of this painter's later and more naturalistic style

Its maximum length is 8 m., breadth 4 m., and area 50 sq. m. There are mineral springs near Charlestown, the port and capital on the S.W. coast. Cotton, sugar, cocoa, limes, vanilla, oranges, and coconuts are produced. Discovered by Columbus in 1498, Nevis was colonised by the English in 1628. Pop. 11,383.

**Nevski Prospekt** (Russ., Neva Street). Main thoroughfare of Leningrad, now usually called Oct. 25 Prospekt, and the centre of the commercial life of the city. Among the numerous important buildings on its line of route are the Kazan cathedral and the Duma (town hall). See Leningrad, illus., p. 5074.

**New Albany.** City of Indiana, U.S.A., the co. seat of Floyd co. It stands on the right bank of the Ohio river, 4 m. N.W. of Louisville, and is served by the Chicago, Indianapolis, and Louisville and other rlys. Once a great river port and the largest city in Indiana, the coming of the rly. era has lessened its importance and it is now a centre of the timber and plywood trade. Organized as a town in 1813, it became a city in 1839. Pop. 25,414.

**New Amsterdam.** Town of British Guiana, S. America. It stands near the mouth of the river Berbice, at its junction with the Canje, 65 m. by rly. S.E. of Georgetown. Rice is grown in the surrounding districts. It was founded by the Dutch, who constructed a system of canals connecting various parts of the town. Most of the houses are built of wood. Pop. 10,000. New Amsterdam was the name given by the Dutch to their settlement on Manhattan Island which became New York city in 1664.

**Newall,** CYRIL LOUIS NORTON, 1st BARON (b. 1886). British airman. Born Feb. 15, 1886, and educated at Bedford school and Sandhurst, he qualified as a pilot in 1911, and shortly before the First Great War was engaged in the formation of a flying-school. During the war he served with the R.F.C., becoming chief staff officer, S.E. area, and deputy director of personnel at Air Ministry from 1918. In 1926 he became director of operations and deputy chief of Air Staff. Promoted air vice-marshal in 1930, he held the Middle East R.A.F. command, 1931-34, and in 1937 became air chief marshal. Chief of air staff, 1937-40, he became marshal of the R.A.F. in 1940, and was governor-general of New

Zealand, 1941-46. He was knighted in 1935 and created a baron in 1946. In 1940 he was awarded the O.M.

**Newark.** Mun. bor. and market town of Nottinghamshire, England. It is on the Devon, near its union with the Trent, and is connected with the main course of that river by a short canal. It is 20 m. from Nottingham and 120 m. by rly. from London. The chief building is the church of S. Mary Magdalene. There is a grammar school dating from 1529, town hall, corn exchange, hospital, and free library. The Beaumont Cross is a fine piece of 15th century work.

Newark is the centre of a large agricultural district, and holds an important corn market. The industries include the making of machinery and plaster, iron and brass founding, brewing and malting, while gypsum and limestone are worked in the neighbourhood. Annual fairs are held. The castle, built in Anglo-Saxon times, and rebuilt in the 12th century, was the scene of John's death in 1216. It was held for the king during the Civil War until it surrendered to the Scots in 1646. Then demolished, the ruins include a Norman gatehouse. In 1549 Newark was made a chartered town; it had an M.P. 1673-1885. It now gives its name to a co. constituency. Market day, Wed. Pop. 23,120.

**Newark.** City and port of entry of New Jersey, U.S.A., the metropolis of the state and the co. seat of Essex co. It stands on the Passaic river, 9 m. by rly. W. of New York, and is served by the Pennsylvania and other rlys., also by "tube" and electric rlys. to towns in the neighbourhood, and by steamers. The Pulaski skyway, a 3½ m. viaduct, is 145 ft. above the Hackensack and Passaic rivers. Newark has a busy airport, centre of U.S. domestic traffic. Among the public buildings are the city hall, county court house, and R.C. cathedral.

An important industrial city, Newark has manufactures of jewelry, leather, chemicals, cutlery,

brass and iron products, boots and shoes, clothing, glass, etc. It has 19 insurance companies, employing 30,000 workers. Originally known as Milford, it was settled in 1666 by a colony from Connecticut, and became a city in 1836. Pop. 429,760, in which the Italian element is dominant.

**Newark.** City of Ohio, U.S.A., the co. seat of Licking co. It stands on the Licking river, 32 m. E. of Columbus, and is served by rly. and the Ohio Canal. Boots and shoes, flour, and chemicals are manufactured here. Textiles from glass have been made since 1933. The Baltimore and Ohio Rly. has works here. Settled in 1801, Newark was incorporated in 1813. Pop. 31,487.

**Newark Series.** In geology, series of rocks of Triassic age in E. of U.S.A. The series locally carries coal seams and its sandstones are valuable for building.

**Newbattle.** Parish and village, Midlothian, Scotland. It is on the South Esk river, 1 m. S. of Dalkeith. Newbattle Abbey, a seat of the marquess of Lothian, occu-



Newark, Nottinghamshire. Ruins of the gatehouse and walls of the historic castle in which King John died

pies the site of a Cistercian abbey founded in 1140 by King David I.

**New Bedford.** City and port of entry of Massachusetts, U.S.A., the co. seat of Bristol co. It stands on the Acushnet river, whose mouth expands into a commodious harbour, 55 m. S. of Boston, and is served by the New York, New Haven, and Hartford Rly., and by a series of steamers. New Bedford is an important cotton centre, and other manufactures are silk, cut glass, machine-shop and foundry products. Its once famous whale fishery is now almost extinct. New Bedford was incorporated in 1812, and became a city in 1847. In 1928 a strike of textile operatives led here to a new agreement for cooperation to increase production. Pop. 110,341.

**Newbery,** JOHN (1713-67). British publisher. The son of a Berkshire farmer, he became

part proprietor of the Reading Mercury in 1737. In 1740 he set up a publishing business, which he moved to London in 1744, issuing the Universal Chronicle or Weekly Gazette in 1758, and the Public Ledger in 1760. Johnson, Goldsmith, and Smollett wrote for him, and he is described in The Vicar of Wakefield. Newbery, who made a feature of children's books, including Goody Two Shoes, was also a patent medicine vendor. He died Dec. 22, 1767.

**Newbolt, Sir Henry John** (1862-1938). British poet. He was born at Bilston, June 6, 1862, and educated at Clifton and at Corpus Christi, Oxford. For twelve years he practised as a barrister, but having published an historical novel, Taken from the Enemy, in



Sir Henry Newbolt,  
British poet  
Russell

1892, and rousing verses of the sea, Admirals All, 1897, he gradually left the law to make literature his profession. His later work included The Island Race (1898), The Sailing of the Long Ships, and The Book of the Happy Warrior. Many of his poems, such as Drake's Drum, and the sequence, Songs of the Fleet, became even more widely known when set to music by Stanford. Also popular were Clifton Chapel and Vital Lampada ("There's a breathless hush in the close-to-night"). Knighted in 1915, he was professor of poetry in the Royal Society of Literature, 1911-21. His autobiography, My World as in My Time, was pub. 1932. He died April 19, 1938.

**New Brighton.** Watering-place of Cheshire, part of the county borough of Wallasey. It stands at the junction of the Mersey and the Irish Sea. It has a rly. station, and is connected by ferry steamers with Liverpool and Birkenhead. There is a sea front of 7 miles, with sports facilities. Pop. 6,996. See Wallasey.

**New Brighton.** Part of New York City, U.S.A. Formerly a separate town on the N.E. shore of Staten Island, it was incorporated with Richmond, one of the New York boroughs, in 1898.

**New Brighton.** Borough of Pennsylvania, U.S.A., in Beaver co. It stands on the Beaver river, 29 m. N.W. of Pittsburgh, and is served by the Pittsburgh and Lake Erie rly. The town grew

from Big Beaver blockhouse, erected during the war of independence. It was first acknowledged as a town in 1815, and incorporated in 1838. Pop. 9,960.

**New Britain** or **NEW POMERANIA.** Island of the Bismarck Archipelago (*q.v.*). It is separated from the E. coast of New Guinea or Papua by Dampier Strait. Its length is about 300 m., and its breadth narrows to 10 m.; its area is about 10,000 sq. m. The coasts are low and fertile, but the interior is mountainous and includes several volcanoes, some active. The highest point is The Father, alt. 7,500 ft. Well wooded, and with rich vegetation, it has a heavy rainfall and a moist, warm climate. Its N. projection, the Gazelle Peninsula, contains the former German settlement and port of Herbertshöhe, now Kokopo (*q.v.*). There are numerous plantations under rubber, coffee, and cotton. The natives are Melanesians and the pop. is 90,349. It was occupied by Australians in 1914, and government was taken over by Australia under League of Nations mandate, later under U.N. trusteeship.

In the Second Great War Japan's assault on New Britain began on Jan. 4, 1942, when the aerodrome at Rabaul was raided. On Jan. 23 Japanese troops landed there, meeting with fierce opposition from Australian forces. There was a further landing at Gasmata on Feb. 10, the occupation of the island being completed by the end of the month. On Dec.

15, 1943, U.S. and Australian troops landed on Arawe pen.; and eleven days later U.S. marines began to establish themselves on both sides of C. Gloucester. The two forces linked on Feb. 24, 1944. On March 6 and 9 further landings were made near Talasea; and the Japanese withdrew from their bases at C. Hoskins and Gasmata into the Gazelle pen., covering Rabaul, into which port, however, shipping no longer ventured. About a year later the Australians, who in Nov., 1944, had taken over full responsibility for New Britain, began by a series of small but fierce operations to exert pressure on the Japanese, who withdrew slowly N. Fighting was still

going on when Japan surrendered in Aug., 1945. The surrender of all Japanese forces in the S.W. Pacific was signed in St. George's channel, 28 m. S.E. of Rabaul on board the aircraft carrier H.M.S. Glory on Sept. 6. In New Britain, as in New Guinea, the native pop. refused voluntary help to the Japanese.

In 1947 Kokopo was selected as the administrative capital of New Britain. Rabaul, formerly capital of the mandated territory of Australian New Guinea, was so badly damaged during the Second Great War that in 1946 it was decided not to rebuild it.

**New Britain.** City of Connecticut, U.S.A., in Hartford co. It is 10 m. S.W. of Hartford, and is served by the New York, New Haven, and Hartford rly. The chief buildings are the state normal school and the R.C. cathedral. New Britain is noted for its hardware. Settled in 1687, it was incorporated in 1850, and became a city in 1871. Pop. 68,685.

**New Brunswick.** Maritime prov. of the dominion of Canada. It is bounded N.W. by the prov. of Quebec, W. by the U.S.A., and on the other sides by the sea, except where the narrow isthmus of Chignecto separates it from Nova Scotia. The surface is undulating, the only flat region lying along the E. coast. In the N. are a number of low spurs



New Brunswick  
arms



New Britain. Map of the island in the Bismarck Archipelago, the scene of much fierce fighting in the Second Great War

of the Appalachians. The deeply indented coast, which includes Chignecto and Miramichi Bays and the estuary of the St. John, has many fine harbours. Grand Manan and Campobello islands, both fishing centres, lie off the coast. The longest river is the St. John (400 m.), others being the Miramichi, Restigouche, forming part of the N. boundary, and St. Croix. Grand Lake is the largest lake.



Much of New Brunswick is covered by forests, in which moose and caribou are found, and lumbering and the making of wood-pulp are important industries. The soil is fertile; wheat, oats, barley, and other crops, including apples and potatoes, are raised, cattle are reared, and there is some dairy farming, though more than half the land suitable for farming is not occupied. Iron, coal, gypsum, oil, and other minerals are mined, and natural gas exists. There is a large fishing industry, and ample water power. The railways in the province are the C.P.R. and the Canadian National system. Saint John, the principal port, is open all the year round, and other important centres are Fredericton, the capital, and Moncton.

The prov. is represented in the Dominion Parliament at Ottawa by 10 senators and 11 members of the house of commons. For controlling local affairs there is a parliament of one house, its 48 members being elected for five years and two months, unless sooner dissolved by the lieutenant-governor. Responsible to this is a ministry under a premier, and the depart-

ments include those of education, agriculture, land, etc. The towns and rural districts have elected bodies to manage their own affairs. Until 1892, when the legislative council was abolished, the parliament consisted of two houses.

New Brunswick was settled by the French in 1604. Settlers from England and Scotland arrived about 1762, but the province really dates from the end of the American War of Independence, when many loyalists from the U.S.A. made their homes here. In 1784 it was separated from Nova Scotia and made into a distinct prov. It was given a representative assembly, but it was not till 1848 that this obtained any control over the executive council. In 1867 New Brunswick became one of the provinces of the dominion of Canada. Its area is 27,985 sq. m. Pop. 457,401. *See* Canada.

**New Brunswick.** City of New Jersey, U.S.A., the co. seat of Middlesex co. It stands on the Raritan river, at the head of navigation, 30 m. S.W. of New York, and is served by rly. and canal. Here is the state university, including Rutgers College (1766). Surgical

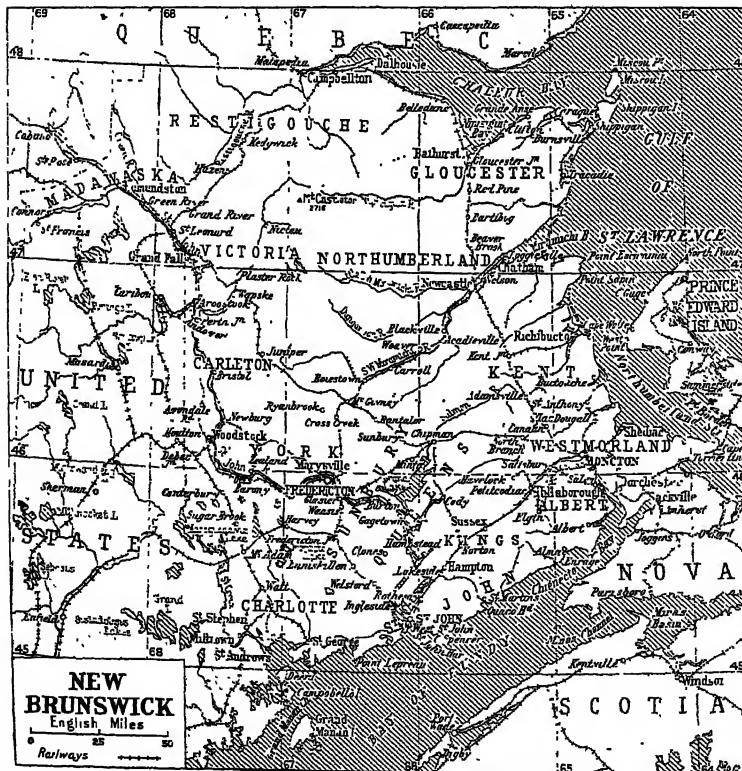
appliances and pharmaceutical products are made. Settled in 1681, New Brunswick was incorporated in 1736, and became a city in 1784. Its present name was given in 1714, to celebrate the fact that a member of the house of Brunswick was king of Great Britain. Pop. 33,180.

**New Brunswick, UNIVERSITY OF.** Educational centre at Fredericton, N.B. It was founded in 1859 to take over King's College, an establishment dating from 1800. The government of the prov. controls its working. Strong in applied science, especially engineering and forestry, it has laboratories, museums, an observatory, and a library. There is a law faculty at Saint John.

**Newburg.** Name of several towns and villages in the U.S.A. The largest, 6 m. S.E. of Cleveland, Ohio, with iron and steel industries, has been incorporated into the neighbouring city. Another is situated on the Ohio river, 10 m. E. of Evansville in Indiana. It is in a noted tobacco-growing district, and has industries connected with coal and coke. Another Newburg is 13 m. E.N.E. of Grafton in

West Virginia. Others are in Maine, 15 m. W.S.W. of Bangor; in Pennsylvania, 6 m. N.N.W. of Shippensburg; in Wisconsin, on the Milwaukee river, 33 m. S.E. of Ford du Lac; and in Missouri, in Phelps co., on the St. Louis and San Francisco rly.

**Newburgh.** Royal and mun. burgh and seaport of Fife, Scotland. It stands on the Firth of Tay, 11 m. from Perth, and has a railway station. There is a town hall, and the industries include fishing and the manufacture of floor-cloth, linen, etc. Some shipping is carried on from a small harbour. The property of the abbots of Lindores, Newburgh was made a burgh in 1266. The ruins of the Benedictine abbey of Lindores, founded in 1178, outside the town, can still be seen: also Macduff's Cross, where the clan was granted sanctuary after a murder. Pop. 2,500.



New Brunswick. Map of the Canadian maritime province lying between Quebec and Nova Scotia

**Newburgh.** City of New York, U.S.A., in Orange co. It stands on the right bank of the Hudson river, 58 m. N. of New York city, and is served by rlys. and by steamers. Settled by Germans in 1709 and once a whaling port, Newburgh has become a link between the Pennsylvania coal mines and the New England market and has varied industries. Washington's headquarters, a stone structure, is now a museum. The American army was disbanded here in 1783, and a victory tower commemorates the termination of the war. Newburgh was incorporated in 1800 and became a city in 1865. Pop. 31,883.

**Newburn.** An urban dist. of Northumberland, England. It is on the Tyne, 6 m. W. of Newcastle, and has a rly. station. The old church of S. Michael was restored in the 19th century. Near is the Roman wall, and Roman remains have been found here. There are coal mines in the vicinity; machinery, tools, glass, and fireclay are made, and there are iron and steel works. Pop. 21,010.

On Aug. 28, 1640, there was a skirmish here. At issue with Charles I, the Scots had sent an army of 25,000 men into England. When they reached Newburn they found the ford there guarded by a body of royalists. After a cannonade, the latter, much inferior in numbers, fled, and the Scots crossed the Tyne.

**Newbury.** Mun. bor. and market town of Berkshire, England. It stands on the Kennet and the Kennet and Avon canal, 17 m. W.S.W. of Reading and 53 m. from London. It is a junction on the rly., and the terminus of a light rly. The church of S. Nicholas was rebuilt by John Smallwood, called Jack of Newbury, who led 150 men to Flodden and died in 1519. The Cloth Hall is now a museum, and there are old almshouses and an old grammar school.

Newbury is the market town for a considerable area. It holds yearly an important market for sheep, while malting, brewing, and milling are carried on. There are establishments for training race-horses. The town includes Speenhamland, and near are Shaw House, an Elizabethan residence, and the remains of Donnington Castle. A borough in the 16th century, Newbury became prosperous owing to the expanding trade in wool, but soon after 1600 this began to decline. The corporation was reformed under the Act of 1835. Market day, Thurs. Pop. 17,490.

**Newbury, BATTLES OF.** Fought during the Civil War, Sept. 20, 1643, and Oct. 27, 1644.

The parliamentary army under the earl of Essex, about 15,000 strong, was returning through Wiltshire to London, after the relief of Gloucester. To cut it off the king arrayed his army at Newbury, while Rupert and the horse-men had skirmishes at Aldbourne Chase and elsewhere. Essex, however, reached Enborne, a village 3 m. from Newbury, and on the downs between this place and Newbury, with the Kennet to the N., the fight took place. It began with a series of royalist attacks, but the London train bands would not give ground, and elsewhere the parliamentarians stood firm against repeated assaults, making good use of hedges. When darkness came on the royalists, their ammunition exhausted, fell back, and Essex, left in possession of the ground, was able to continue his march. The most notable death was that of Lord Falkland.

In Oct., 1644, the royalist army was operating around Oxford, and the parliamentary forces were sent to engage it. They found the king with about 10,000 men near Newbury, with the rivers Kennet and Lambourn in front of him, and on his flank Donnington Castle, one of his strongholds. The plan of the parliamentarians was for a flank attack. One section, after a long circuitous march, carried out its part of the programme by capturing the village of Speen in the rear of the main royalist position, but the others did little, and night fell without a decision being reached.

**Newburyport.** City and port of entry of Massachusetts, U.S.A., the co. seat of Essex co. It stands on the S. bank of the Merrimac river, 37 m. by rly. N.E. of Boston, and is served by the Boston and Maine rly. It has a safe and spacious harbour. Settled in 1635, Newburyport was incorporated in 1764, and became a city in 1851. Pop. 14,815.

**New Caledonia.** French island in the South Seas. It is 1,077 m. from Sydney, is 250 m. long and 35 m. wide, with an area of about 8,500 sq. m. Two parallel ranges cross the island and culminate at 5,570 ft.; the numerous rivers are of little use for navigation. The average annual rainfall is about 40 ins., but much of the island is bare or poor savanna. A fringing reef encircles the island, the inner lagoon being of great use for navigation. There are coffee and cotton plantations, cattle runs, orchards,

and vineyards. Nickel of high quality, cobalt, chrome, coal, gold, and other minerals occur; some ore is smelted at Noumea, and a rly. joins it with Paita, 20 m. away. Native Kanakas are the chief labourers. Pop. 53,245.

Discovered by Capt. Cook in 1774, the island became French in 1853. During 1864-95 it was a penal settlement, and the remaining convicts are now kept in the islet of Nou, opposite Noumea, the capital. The Isle of Pines, Loyalty Islands, Huon Islands, Chesterfield Group, Walpole Island, and Mato Island are dependencies of the island. Surprise Island in the Huon group yields phosphate, and Walpole Island guano. The Wallis archipelago, N.E. of Fiji, and Futuna and Alofi to the S. of this group, are more remote dependencies. The colony is administered by a governor, assisted by a privy council and an elected council-general. On Sept. 10, 1940, the island rallied to the Free French.

**Newcastle.** Market town of co. Limerick, Eire. It is 24 m. S.W. of Limerick. Pop. 2,790. There are a number of other places of this name in Ireland, these including baronies in counties Dublin and Wicklow, and villages in counties Tipperary, Meath, and Galway.

**Newcastle.** Watering-place of co. Down, N. Ireland. It stands on Dundrum Bay, 11 m. S.W. of Downpatrick, and 36 m. by rly. from Belfast. Amid magnificent scenery, it is visited for its bathing and golf. There are no remains of the castle built in the time of Elizabeth.

**Newcastle.** Town of N.S.W., Australia. It stands at the mouth of the Hunter river, 102 m. by rly. N.N.E. of Sydney, on the largest coalfield in Australia. Between the town and Catherine Hill Bay the coal seams are exposed in the sea cliffs. The original settlement followed the discovery by Shortland of coal near the mouth of the Hunter in 1796. Pop. 127,660.

**Newcastle.** Town of Natal, S. Africa. It stands on the Incaud river at the foot of the Drakensberg, 197 m. from Pietermaritzburg and 160 from Durban, with which it is connected by rail. It is the centre of a coal-mining district, has considerable trade in wool and grain, and has iron and steel works, stone quarries, and brickfields. It stands at an alt. of 3,890 ft. The buildings include town hall and public library. During the Boer War of 1880-81 it served as the British base, and here peace was signed. In the S. African War, 1899-1902, its position on the bor-

der of the Transvaal again made it important. The Boers occupied it in their invasion of Natal in Oct., 1899, and it was not regained by the British until June, 1900. Pop. 6,943 (2,900 white).

**New Castle.** City of Pennsylvania, U.S.A., the co. seat of Lawrence co. It stands at the confluence of the Neshannock and Shenango rivers, 49 m. by rly. N.W. of Pittsburg, and is served by the Baltimore and Ohio and other rlys. Its main industry is the making of hotel pottery. Pop. 48,674.

**Newcastle.** The chief town of Northumberland co., New Brunswick, Canada, on the left bank of the Miramichi river, at the head of deep water navigation, 102 m. from Moncton. Centre of a farming, fishing, and hunting district, it has a pop. of 3,781.

**Newcastle, DUKE OF.** British title borne by the family of Pelham-Clinton. It is taken from Newcastle-under-Lyme. The first duke was the soldier, William Cavendish (v.i.), who, in 1665, was made duke of Newcastle-upon-Tyne. His son Henry, the 2nd duke (d. 1691), left no sons, so the title became extinct, but in 1694 it was revived for Henry's son-in-law, John Holles, earl of Clare (d. 1711).

He, too, left no sons, and his estates passed to a nephew, Thomas Pelham, who was made duke of Newcastle-upon-Tyne in 1715, and duke of Newcastle-under-Lyme in 1756. He was the associate of the elder Pitt. When he died in 1768 his earlier dukedom became extinct, but the newer one passed to a nephew, Henry Fiennes Clinton, 9th earl of Lincoln, a title dating from 1572, whose descendants still hold it. Henry, the 5th duke (1811-64), sat in the house of commons as earl of Lincoln, 1832-51. He was first commissioner of woods and forests, 1841-46; chief secretary for Ireland, 1846; secretary for war and the colonies, 1852-54; and for the colonies only, 1859-64. In 1879 Henry (1864-1928) became the 7th duke, and on his death he was succeeded by his brother, till then known as Lord Francis Hope. He died in 1941 and his son, Henry Pelham-Clinton-Hope (born April 8, 1907) became 9th duke. The duke's seat is Clumber, Nottinghamshire. His eldest son is called the earl of Lincoln.

**Newcastle, WILLIAM CAVENDISH, 1st DUKE OF (1592-1676).** English royalist. He was made earl of Newcastle by James I, 1628. A friend of Charles I, he raised troops against the Scots

in 1639, and was tutor to Prince Charles, 1638-41. In 1642 he raised the siege of York, besieged



William Cavendish,  
1st Duke of Newcastle  
After Van Dyck

Leeds, April, 1643, and in June defeated the parliamentarians at Adwalton Moor. A marquess in 1643, he was relieved by Prince Rupert at York, and, after fighting at Marston Moor, left England and lived in poverty in the Netherlands until after the Restoration, 1660. He was recompensed by several royal offices and the dukedom, 1665, and died Dec. 25, 1676. He wrote plays and two works on horsemanship, 1658 and 1667. He married in 1645 Margaret Lucas (d. 1673).



Newcastle-under-Lyme, Staffordshire. The High Street of this N. Staffordshire coal and pottery centre

**Newcastle, THOMAS PELHAM-HOLLES, 1st DUKE OF (1693-1768).** English statesman. Son of Thomas, 1st Lord Pelham, he was born July 21, 1693, educated at Westminster and Cambridge, and succeeded his father in 1712. A supporter of George I's accession, he was made

earl of Clare, 1714, and duke of Newcastle-upon-Tyne, 1715. A rich Whig landowner, in 1724 he joined Walpole's cabinet, and continued to hold office, save during the winter of 1756-57, until superseded by the earl of Bute in 1762. On the death of his brother, Henry Pelham (q.v.), he was first lord of the treasury, 1754-56. Made duke of Newcastle-under-Lyme, he became nominal chief in 1757 of an administration in which "Newcastle said what he liked and Pitt did



Thomas Pelham-Holles, 1st Duke of Newcastle  
After Hoare

what he liked," the latter being war minister, until both were dismissed by George III. Newcastle was lord privy seal under Rockingham, 1765-66, and died Nov. 17, 1768. For a politician of his time he was uncommonly honest. His correspondence with Chesterfield, ed. Sir R. Lodge, appeared in 1930.

**Newcastle Emllyn.** Urban dist. of Carmarthenshire, Wales. It is mainly on the left bank of the Teifi, 9 m. S.E. of Cardigan, with a rly. station. Across the river is Cardiganshire. The ancient Dinas Emllyn, the place was a Roman station, and was called Newcastle-in-Emllyn when a castle was built here. Pop. 762.

**Newcastle - under - Lyme.** Mun. bor. and market town of Staffordshire, England, taking its name from the "new castle"

founded on the Roman *Limes Britannica* in the 12th century. It stands on Lyme Brook and the main London to Liverpool road A6, 16 m. N.N.W. of Stafford, and is served by rly. Buildings include the ancient parish church of S. Giles (fourth on present site); an 18th cent. guildhall; and high

schools for boys and girls. In the borough (enlarged 1932) and immediate neighbourhood are collieries, brick and tile works, and pottery factories; other products include cotton and fustian clothing, paper, and light engineering. Formerly the town was noted for felt hats.

Newcastle was granted to Simon de Montfort in 1265; later the town passed to Edmund Crouchback. Chartered in 1590, it sent two members to parliament from 1353 to 1885, and now has one; it also gives his title to the duke of Newcastle. Philip Astley, circus performer, was born here. Among the regicides in 1649, Harrison was a native and Bradshaw was recorder of Newcastle. Market days, Mon., Fri., Sat. Pop. 63,850.

**Newcastle-upon-Tyne.** River port, city, and co. of itself in Northumberland, England. It is



Newcastle-under-Lyme arms

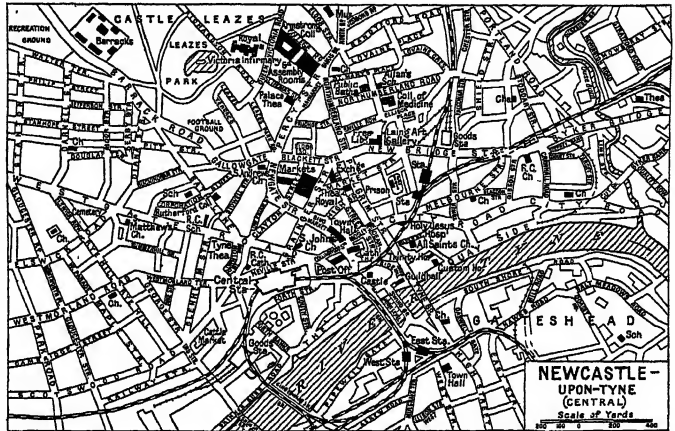
the centre of a large coal mining, shipbuilding, industrial, and agricultural area, and stands 8 m. from the sea, on the N. bank of the Tyne. Geographically it is the natural outlet for much Northumbrian agriculture. To facilitate shipping, the Tyne commission



Newcastle-upon-Tyne arms

undertook from 1861 its great work of deepening and improving the river. Newcastle's main expansion has been to E. and W., owing partly to the transport facilities of the river. Its industries, apart from coal and shipbuilding, include engineering works, electrical works and power distribution, chemicals, grindstones, and the manufacture of lead and of copper alloys. There are markets for corn, hay, and straw, cows, fish, vegetables, etc.

Seven bridges cross the river: Tyne. 1928; High Level, 1846-49; Swing, 1876; Redheugh; Scotswood suspension; Scotswood (rly.); King Edward VII (rly.). Of bridges crossing the valley of the Ouse-



Newcastle-upon-Tyne, Northumberland. Plan of the central districts of the city, including a part of Gateshead

burn, Byker (rly.) and Armstrong Bridges are conspicuous. The Roman bridge, Pons Aelii, was where the swing bridge now is. Open spaces and parks are extensive, e.g. Town Moor (927 acres), Nuns Moor, Castle Leazes, Leazes Park, Exhibition Park, in the N.; Jesmond Dene, Armstrong,

Heaton, and Walker Parks, in the E. and N.E.; Elswick, Hodgkin, and Scotswood Parks, in the W.

S. Nicholas church, a cathedral since 1882 and a bishop's seat, is on the site of a church of 1091, which was rebuilt 1172-78, but burnt down 1216; the rebuilding was completed 1350, and the lantern tower added about 1450. S. Andrew's and S. John's contain parts dating from the 12th century. Other conspicuous churches are All Saints, S. George's, S. Matthew's, and S. Mary's R.C. cathedral. The Great Tower, or keep, of the castle, and the Black Gate, 1247, and its museums, are held by the Society of Antiquaries.

King's College for medicine and science, in the university of Durham, is in the city. Schools include Rutherford grammar and high schools, Heaton grammar and high schools, Royal grammar school, Central high school, Newcastle high school, S. Cuthbert's R.C. grammar school, etc. Music is fostered by the Newcastle and Gateshead choral union, musical tournaments being held annually. The Institute of Mining Engineers, the N.E. Coast Institute of Engineers and Shipbuilders, the Society of Antiquaries, the Classical Association, and the Historical Association watch over other interests. Public libraries contain nearly 300,000 books, MSS., etc.; the art gallery (1904) has loan exhibitions; the Literary and Philosophical Society (1793) has its library, lecture hall, etc., near the central station. Its History, by S. Watson, 1897, illuminates local life. The Royal Victoria Infirmary, 1906, replaces the old infirmary, 1752. Trinity House (hall, chapel, almshouses) is in Trinity Chase, just off Quayside.



Newcastle-upon-Tyne. 1. West front of S. Nicholas cathedral. 2. Grainger Street, the city's principal thoroughfare, with the monument to the 2nd Earl Grey in the centre. 3. Black Gate, the 13th cent. entrance to the castle. 4. The Keep of the castle. See also Bridge illus., p. 1424

Four members are returned to parliament. The chief magistrate has since 1906 been styled lord mayor. The mayoralty dates back to 1216; the shrievalty to 1400. The old government of Newcastle was dissolved in 1835. There are 19 aldermen and 57 councillors.

Newcastle became a point on the Roman Wall when Hadrian in 120 built his bridge (Pons Aelii) and camp. The town had no importance until William I's sons established the fort known from 1080 as the New Castle. The Scots held it during Stephen's reign, but Henry II recovered it, built a castle, the keep of which still remains, and granted a charter. John confirmed the latter in 1201, and added the right to have a merchant guild in 1216. Strong new walls and towers, parts of which still remain, were built in Edward I's reign.

In 1320 Newcastle became the northern staple port for wool. By 1342 the newer trade and craft guilds had won a share in the town's government; fifty years later was established the Fraternity of Trinity House, which lighted and buoyed the Tyne, and exacted shipping dues. By the charter of 1400 Newcastle became a county in itself, and Elizabeth's great charter of 1600 confirmed the old privileges and added new ones. Meanwhile the coal trade, both home and foreign, had greatly expanded. In the Civil War, Newcastle favoured the royalists, and in 1644 was besieged and captured by the Scots. The shipbuilding trade added to Newcastle's prosperity; as also, from the 17th to the late 19th century, did glass-making. Pop. est. 290,730. See Tyne. *Consult* History and Antiquities of Newcastle-upon-Tyne, J. Brand, 1789; History of Newcastle and Gateshead, R. Welford, 3 vols., 1885-87.

**New Church.** Religious denomination which accepts the claim of the Swedish scientist and mystic, Emanuel Swedenborg, that in 1744-45 he was granted insight into the spiritual world by direct revelation. Organized as a society in 1787 by Robert Hindmarsh (1759-1835) of Clerkenwell, it has 75 societies with about 6,700 members in Great Britain, and is represented on the Continent and in the U.S.A. The Bible is interpreted as having both a literal and a spiritual sense; while all things in the material world have their counterpart both in heaven and in hell. "All religion has relation to life; and the life of religion is to do good." Literature is published

by the Swedenborg Society, 20, Bloomsbury Way, London, W.C.1.

**Newchwang** OR YINGKOW. Chinese seaport, in Liaoning prov., Manchuria. Although by the treaty of Tientsin, 1858, a treaty port was created at Newchwang, it was Ying-kow, 14 m. up the river Liao, which became the centre of foreign settlements and to which Europeans generally refer by the name of Newchwang. It is connected with the S. Manchuria rly., linking Mukden and Dairen (Dalny), and with the Pekin-Mukden railway. Ice-bound for three months in the year, it has declined in importance since the opening of Antung and the development of Dairen. Occupied by the Japanese in 1932, it was under the sovereignty of the puppet state of Manchukuo until the conclusion of the China-Japan conflict in 1945. Extraterritorial rights were abrogated by Great Britain and the U.S.A. in 1943. Pop. 82,000.

**New College.** College of Oxford university. It was founded in 1379 by William of Wykeham, as the college of S. Mary of Winchester, but soon became known as New College. It was intended for boys from Winchester College, and this connexion has been maintained, scholarships being still reserved for Winchester. Five fellowships are held by professors known as Wykeham professors. The head is the warden. The college, one of the largest in the university, has a beautiful garden, bounded by the only perfect remaining part of the city wall. There are a large hall, cloisters, and a tower. The fine chapel contains the pastoral staff of the founder and stained glass by Reynolds. New buildings face Holywell Street. The college maintains a choir school, and the rendering of evensong each day during term is celebrated.

New College, Hampstead, a theological training centre for Congregational ministers, is affiliated to London university.

**Newcomb, SIMON** (1835-1909). American astronomer. Born March 12, 1835, in Nova Scotia, he went



Simon Newcomb,  
American  
astronomer

to the U.S.A., 1853, and in 1857 took part in calculating the tables of the American nautical almanac. By 1861 he was professor of mathematics in the navy. He was secretary

of the transit of Venus commission, 1871-74, director of the nautical almanac, 1877-97, and professor of mathematics at Johns Hopkins university, 1884-94. His revision of the lunar and planetary tables resulted in the simplification of nautical almanacs of the world. He received the gold medal of the Royal Astronomical Society, and Copley medal of the Royal Society. His autobiography, *Reminiscences of an Astronomer*, appeared in 1903. He died July 11, 1909.

**Newcomen, THOMAS** (1663-1729). English engineer, born at Dartmouth. About 1705, with financial help from John Colley or Cawley, he constructed an improved form of Savery's steam engine. Newcomen's machine was an atmospheric (steam condensing) pumping engine, and was used about 1710 to raise water from mines near Dudley. It remained the standard model until the improved model of Watt, c. 1765.

**Newcomes, THE.** Novel by W. M. Thackeray, published in 1855, with the full title *The Newcomes*:



New College, Oxford. Front quadrangle, showing, left, the hall and muniment tower

*Memoirs of a Most Respectable Family*, edited by Arthur Penden-nis, Esq. It was issued first in monthly parts, illustrated by Richard Doyle. A study of middle-class social life in the first



half of the 19th century, it includes several autobiographical touches, and has in Colonel Newcome one of the best remembered of Thackeray's characters.

**New Corinth.** Town of Greece. It was founded in 1858, 3 m. from the site of ancient Corinth, destroyed that year by earthquake, and has progressed since the Corinth ship canal was cut through the isthmus in 1893. It has a good harbour, and exports currants. *See Corinth.*

**New Cross.** District of S.E. London. In the bor. of Deptford, it has rly. and underground rly. stations. It is a populous area between Peckham on the W. and Greenwich on the E. New Cross Road connects Old Kent Road with Queen's Road, Peckham, and Deptford Broadway. Near the junction of New Cross Road and Lewisham Way is Goldsmiths' College. For damage during the Second Great War, *see Deptford.*

**New Cut.** Former name of a London thoroughfare, now The Cut. It connects Lambeth Lower Marsh and Waterloo Road with Great Charlotte Street and Blackfriars Road, S.E. Notable for its brokers' shops, street stalls, and Sunday trading, it shared with Lambeth Marsh a somewhat unenviable reputation, dating from the days of Massinger. At the Waterloo Road corner stands the Royal Victoria Hall, formerly the Royal Coburg Theatre. Better known as the Old Vic (*q.v.*), this was damaged and closed during the Second Great War.

**New Deal.** The popular name for the policy of F. D. Roosevelt at the opening of his first term as U.S. president, 1933. He coined it during his election campaign to indicate an attitude rather than any specific plan; it suggested that the "little man" was going to be given more chance. It came to denote a definite legislative programme for each emergency as it arose, with measures for (1) relief, such as the Works Progress Administration and the Social Security Act; (2) recovery, such as the National Recovery Administration and the Agricultural Adjustment Administration; (3) reform, such as the Federal Housing Administration, the National Labour Relations Act, and the T.V.A.

**New Delhi.** Official name for the capital of the Union of India. *See Delhi.*

**Newdigate.** SIR ROGER (1719-1806). English antiquary. Born at Arbury, Warwickshire, May 30,

1719, and educated at Westminster and University College, Oxford, he succeeded his brother as 5th baronet, 1734.



Sir R. Newdigate,  
British antiquary  
After Romney

He was M.P. for Middlesex, 1741-47, and for Oxford university, 1750-80. Sketching in early youth old French and Italian architecture, he afterwards travelled in quest of marbles and other antiquities. He presented some to his college and the Radcliffe library, besides contributing £2,000 for transferring to Oxford the Arundel marbles, now in the university galleries there. He died Nov. 23, 1806.

**Newdigate Prize.** Award for the best poem on a given subject awarded each year to an undergraduate of the university of Oxford. It was founded in 1806 by Sir Roger Newdigate, and is worth 21 gs. Dean Stanley, Ruskin, Matthew Arnold, Sir Edwin Arnold, Wilde, and Laurence Binyon are among those who have won it.

**Newel** (old Fr. *noiel*, kernel). In architecture, term originally denoting the central post or pillar of a spiral staircase. It is now extended to the angle posts in a straight staircase. The newel is a feature of the massive Jacobean staircase, in which it is crowned by a handsomely carved finial or by a statue.

**New England.** Name given to certain N.E. states in the U.S.A., formerly belonging to Great Britain. They are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, and their inhabitants, descended from Scottish Presbyterians and English Puritans, are familiarly styled Yankees. The coast was explored in 1583 by Sir Humphrey Gilbert, and in 1614 by Capt. John Smith, to whom the name New England is due. The Plymouth colony was established in 1620 in Massachusetts, and in 1643 a confederacy known as the United Colonies of New England was formed by the federation of New Haven, Connecticut, Massachusetts Bay, and Plymouth colonies, annual and later triennial sessions being held. Area, 63,206 sq. m. Pop. 8,437,290. *See Pilgrim Fathers*, and articles on separate states.

**New England Range** or **NEW ENGLAND PLATEAU.** Mountainous area of Australia, in New South Wales. It is the N.E. section of the

plateau which crosses New South Wales roughly parallel to the coast. The E. face is a steep scarp separated from the Pacific Ocean by a coastal plain; on this side the Clarence, Richmond, and Tweed rivers flow between outlying parts of the plateau, such as the Richmond Range. To the W. the plateau drops in gentler slopes. Ben Lomond and other peaks attain to a height of about 5,000 ft.

**New English Art Club.** British body of painters. Founded in 1885 in opposition to the Royal Academy, it furthered the aims of the younger school of painters at a time when Impressionism was little understood or appreciated in England. Its council was elected by members, of whom Steer, Sickert, and Tonks later became famous. It remained a force in England until the advent of the Post-Impressionists shortly before the First Great War. Though many of the more revolutionary artists joined the London Group during the 1920s and 1930s, the "New English" continued to exert influence.

**Newent.** Market town and parish of Gloucestershire, England. It is 10 m. by rly. N.W. of Gloucester, and has some small manufactures. The church, an old foundation dedicated to S. Mary the Virgin, has been largely rebuilt, but contains old monuments. There are mineral springs. Market day, Tues. Pop. 2,299.

**New Forest.** Woodland dist. and co. constituency of Hants, England. In the S.W. of the co. between Southampton Water and the Avon, it has an area of about 144 sq. m. or 93,000 acres. It is about 16 m. from E. to W. and 14 m. from N. to S. The chief towns therein are Lyndhurst, Brockenhurst, Ringwood, and Minstead. The forest is watered by the Beaulieu and other streams. It contains the ruins of Beaulieu Abbey, and at Stoney Cross is the stone which marks the spot where William Rufus was killed. The chief trees are oak and beech. There are some deer in the forest, which has also a breed of ponies. Brockenhurst and Ringwood have rly. stations.

Much of the land, about 63,000 acres, is the property of the crown, and to look after it there are a surveyor, verderers, and other officials, while forest courts are still held. The creation of the forest is usually ascribed to William the Conqueror, but probably he merely reserved for himself an area already forest. *See Hampshire; consult*

The New Forest, E. Godfrey, 1912; W. F. Rawnsley, 1915; The Commoners' New Forest, F. E. Kenchington, 1944.

**Newfoundland.** A former British dominion, since 1949 a province of Canada. It consists of a large island in the N. Atlantic, off the continent of N. America, with a part of Labrador (*q.v.*). The most N. part of the island is at the straits of Belle Isle, which are about 7 m. wide and divide the island from the mainland. The island is 42,734 sq. m. in area. its maximum length and breadth are both about 320 m., and it is roughly triangular in shape. Larger than Ireland, it is the tenth largest island in the world. From its most E. point to the most W. point of Ireland the distance is 1,640 m. At Heart's Content the Great Eastern landed the Atlantic cable in 1867, and within a few miles of the same point the first



Newfoundland arms

successful air flight (by Alcock and Brown) started across the Atlantic in June, 1919. The pop. is 318,177 (including Labrador).

The coast-line of Newfoundland is much indented, giving it a total length of some 6,000 m. Conception, Trinity, Bonavista, and Notre Dame bays are extensive arms of the sea on the E. and N. coasts; Fortune and Placentia bays on the S. contain between them the Burin pen. Bay of Islands and St. George bay are on the much less broken W. coast, White bay on the N.E., and St. Mary's bay on the S. The islands of St. Pierre (*q.v.*) and Miquelon (*q.v.*), 15 m. off the S. coast, are held by the French.

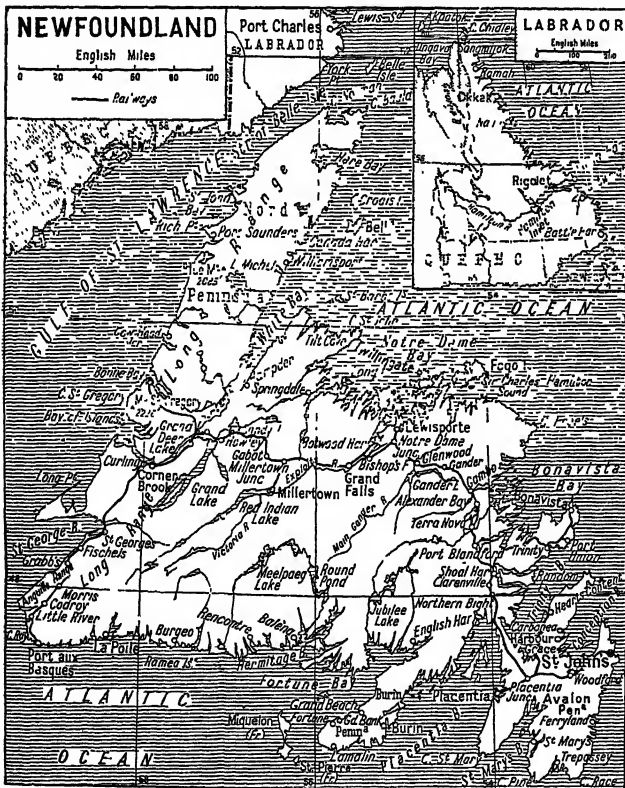
Most of the hills are near the coast. The Long Range runs for about 200 m. along the W. seaboard. Between these and the coast on the S.W. is the Anguille Range. The range of hills near Bonne bay reaches 2,673 ft. St. John's with a pop. of 62,823 is the capital and the largest town. Other principal towns are Corner Brook (8,713); Grand Falls (7,282); Bell

Island (7,200); Carbonear (4,200); Bonavista (3,636); Twillingate (3,485); Burin (2,335); Grand Bank (2,329); and Harbour Grace (2,065). Placentia was the capital of the part of the island that once belonged to France. Around the coast are many fishing villages.

The town of Grand Falls owes its origin and prosperity to the pulp and paper mills established in 1910 by the Anglo-Newfoundland Development co., created by Viscount Northcliffe and his brother, Viscount Rothermere. Botwood, near the mouth of the Exploits river, is the summer port of the co. Corner Brook, second largest town, was inaugurated in 1923 with the construction of a paper mill; there are also paper and pulp mills at Bishop's Falls. There are trans-Atlantic airports at Botwood and Gander (*q.v.*).

Newfoundland has a remarkable area of fresh water, one-third of its surface being covered with lakes and rivers. The longest rivers are Exploits, Humber, and Gander. The Exploits rises among the hills of the S.W., and, after flowing through wooded country for about 200 m., falls into the bay of Exploits, an opening of Notre Dame bay. On it stands Grand Falls. Thwart I. is the largest of many in its channel. The Humber passes through Deer lake into Bay of Islands. The Gander drains Gander lake on its way to Hamilton Sound, and all around the island less extensive streams run down to the sea. The largest of several lakes is Grand lake, 56 m. long, with an island 22 m. in length.

Compared with that of the interior of Canada, the winter climate of Newfoundland is mild and damp, the Feb. temp. at St. John's averaging 23° F. The influence of the cold Labrador current results in summers which are decidedly cool for these lats.; e.g. in Aug. the average temp. generally does not exceed 60° F. The well-known fogs of the Grand Banks are due to the warm moisture-laden air from the Gulf of Mexico moving over the Arctic Labrador current whose icebergs are carried S. to melt in the warmer water. As the temp. of the tropical air mass may be 30° F. above that of the surface of the polar water, there is pronounced cooling of the lower layers of the air. The resulting fogs, although relatively shallow, extending upwards for a few hundred ft. only, are unusually dense and persistent. The summer and autumn are the foggiest



Newfoundland. Map of this island territory off the continent of N. America, now a part of Canada. Inset, the Labrador coast, the island's former dependency on the mainland

seasons ; during the former months air from the heated adjoining continent also produces fogs over the cold seas. Around the coasts of Newfoundland fogs occur on about 70 days a year ; in the Belle Isle strait, to the N., their average frequency rises to 120.

Newfoundland is first and foremost a fishing country, there being apparently unlimited cod and herring in Newfoundland waters, the most productive area in the W. Atlantic. It has also important paper and wood pulp industries, and also produces iron, lead, zinc, copper, and fluorspar. Value of exports of forest-products in 1945-46 was about £725,000, of minerals nearly £2,000,000. Reserves of iron ore are estimated as 3,500 million tons. In 1945-46 the value of the exports of fishery products was nearly £6,000,000. Besides cod and herring the fish taken included lobster, hake, turbot, haddock, salmon, trout, halibut, and eel. Fishing is carried on around the coasts of the island, on the Labrador coast, and on the Banks—submarine areas 200 m. from the Newfoundland coast—from April to Jan., and on the S. coast of Newfoundland all the year round. The seal fishery—which takes place annually on the ice floes—is valuable ; it was resumed in 1946 after being abandoned 1939-45.

#### Scientific Aid to Fisheries

A govt. research lab. advises on many trade and marine biological subjects. A laboratory research boat operates principally in the vicinity of the Grand Banks. Fourteen govt. bait depots produce nearly 7,000,000 lb. of bait fishes. There are quick freezing and cold storage plants on the coast ; 32 million fresh frozen cod filets were exported in 1946 ; 950,000 quintals of salted cod fish were exported in the same year. Newfoundland is represented on the Atlantic herring investigation committee.

There are 90 registered co-operative organizations, and the govt. assists agricultural societies by importing for distribution pure bred bulls, dairy cows, rams, ewes, and boars. Newfoundland has c. 700,000 acres of first class agricultural land, c. 3,000,000 of second class ; but agriculture is not well developed.

**HISTORY.** Newfoundland was discovered by John Cabot on June 24, 1497, an achievement which earned for him from King Henry VII the sum of £10. In 1498 Cabot made a second expedition to Newfoundland. In 1500 the Portuguese, under Gaspar de Cortereal,

discovered and named Conception bay and Portugal cove. From 1521 Portuguese, Spanish, French, Basque, and English fishermen carried on fishing for cod. In 1527 the first attempt to found a colony was made by Robert Thorne, of Bristol. In 1578 the number of fishing boats using Newfoundland waters had reached 400, of which only 50 were English.

#### Earliest Settlement

On Aug. 5, 1583, Sir Humphrey Gilbert formally annexed Newfoundland to England. The next attempt at colonisation on a large scale was by one Guy, a merchant of Bristol. A patent was granted to the earl of Northumberland, keeper of the privy seal, Sir Laurence Tansfield, baron of the exchequer, and Sir Francis Bacon, incorporating them under the name of treasurers and company of adventurers of the city of London and Bristol for the colony and plantation of Newfoundland. This colonisation by Guy was the first permanent settlement in Newfoundland, and the first settlement by the English in any part of what is now the British Commonwealth.

In 1615 Captain Whitbourne, of Devon, was sent to Newfoundland by the high court of admiralty to correct abuses which had sprung up in connexion with the fisheries. On his return he wrote the first history of Newfoundland. In 1623 Sir George Calvert, afterwards Lord Baltimore, obtained a patent from James I giving him the whole of the pen. of Avalon, and settled at Ferryland, near Cape Race.

In 1626 as many as 150 vessels came from Devon to the Newfoundland fisheries. In 1630 a regular code of laws was issued by Charles I to govern these fisheries, and five years later the French received permission to dry fish along the coasts. In 1650 there were only 2,000 inhabitants in the fifteen harbours then settled. In 1654 further colonists arrived from England, under Sir David Kirke, and in 1660 the town of Placentia was founded by the French. By a regulation of 1663, masters of vessels were prohibited from carrying any settlers to Newfoundland, and merchants doing business there petitioned the king against sending out a governor.

In 1697, under the treaty of Ryswick, the French were left in possession of a considerable settlement on the S.W. coast. In 1713, by the treaty of Utrecht, the whole island was ceded by France to England, but France retained certain fishing rights, out of which

innumerable disputes arose. These were settled by the Anglo-French convention of 1904 under which France renounced her claim to exclusive fishing rights, but retained the right to fish in territorial waters from St. John's cape northward and round Cape Ray.

In 1792 the supreme court of judicature was established in Newfoundland, and in 1809 jurisdiction over Labrador was transferred from Canada to the government of Newfoundland. In 1811 permission was first granted to erect permanent houses, and in 1813 the first grants of land were made by Governor Duckworth. In 1818 a fishery treaty was made with the U.S.A., under which disputes arose. These were settled by arbitration at The Hague, in 1910, Great Britain securing the right to make fishing regulations without consulting the U.S.A. and also the confirmation of her contention that the whole extent of a bay from headland to headland is territorial waters.

#### Constitution and Government

Newfoundland was first granted representative government in 1832, and responsible government in 1855 by a constitution under which administration was by a crown-appointed governor and an executive council responsible to an elected legislative assembly of 27 and a legislative council of 24 nominated by the governor for life. 1865 saw the first geological survey of the island. In 1869 took place an election, by which the party favouring confederation with Canada was defeated by a very large majority at the polls. In 1871 the garrison of British troops was withdrawn from Newfoundland. In 1880 took place the turning of the sod for the first railway, E. to W., which, by the addition of various branches, now extends over 1,000 m. At the W. terminus of the route is Port aux Basques, 60 m. from Sydney, on Cape Breton island ; fast steamers connect the terminus with that port.

In 1925 suffrage was extended to women of 21 years and upwards. In 1933 Newfoundland's financial situation had become critical. A royal commission of investigation appointed by the U.K. government recommended that the constitution be suspended ; and this was done by an Act of the U.K. parliament, 1933. From Feb. 15, 1934, to April 1, 1949, the territory was administered by a governor assisted by a commission of six crown-appointed members, three from Newfoundland, three

from the U.K. An elected national convention met in 1946 to make recommendations about future forms of government. These were submitted in 1948 to a referendum, which gave a majority of 6,556 in favour of confederation with Canada. On April 1, 1949, Newfoundland duly became a Canadian province. Constitutional government under a lieutenant-governor was restored. The province sends six senators and seven members of the house of commons to the Canadian parliament.

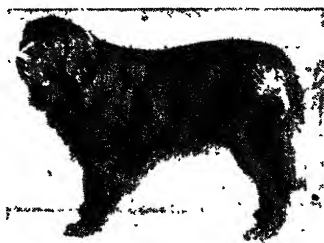
Newfoundland gave generously in men and money during the two Great Wars. In the First, nearly 12,000 men enlisted in the British forces, besides 3,000 who joined the Canadian army; the Royal Newfoundland regt. fought at Gallipoli and in France. In the Second Great War, two artillery units were recruited as part of the British army; one served with distinction in N. Africa and Italy; the other fought on the western front, being the first heavy regt. to cross the Rhine. Three thousand Newfoundlanders joined the Royal Navy, more than a thousand the merchant navy; others served with the British and Canadian air forces; it was estimated that more than a quarter of the male population of military age saw service abroad. More than 500 women enlisted in the Canadian forces. A forestry corps was raised in both wars and rendered valuable service in Great Britain.

In November, 1940, began the development of Newfoundland as the western terminus of the Atlantic air ferry; a huge airport was developed at Gander, from which aircraft were flown from U.S. and Canadian factories direct to Great Britain; after the war Gander became a staging point on the regular trans-Atlantic route. Sites in Newfoundland were granted on a 99-year lease to the U.S.A. in Jan., 1941, under the British-U.S. agreement of Sept., 1940, for development as air and naval bases, and the presence in the island during the Second Great War of large U.S. forces brought it a prosperity it had never known before. *Pron.* Newfoundland.

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1946; Report on the Financial and Economic Position of Newfoundland, 1946. Histories: C. Pedley, 1863; D. W. Prowse, 1897.

**Newfoundland Dog.** Large, handsome, and intelligent breed of dog. First introduced to Great

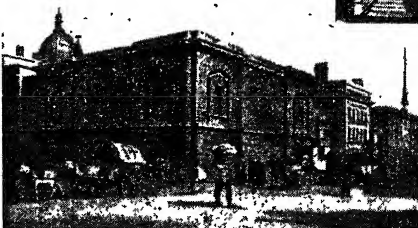


Newfoundland Dog. Champion Gipsy, a prize specimen of the breed

Britain from Newfoundland in the 18th century, the breed has been further improved, and the conservation of its good points by breeders is looked after by the Newfoundland Club, whose influence has been mostly in favour of a dog wholly black, save for a patch of white, perhaps, on the chest and toes. Probably the original colour was white with black head, black saddle mark, and black at the base of the tail. According to the standard fixed by the club, the average height at shoulders is 27 ins. for a dog, and 25 ins. for a bitch; but many specimens are larger.

The Newfoundland's coat is flat and dense, rather coarse and oily, and falls back into position when disarranged. The forelegs are straight and muscular, the feet large and well shaped. The tail, which reaches below the hocks, is thick, covered with long hair, and slightly curved at the tip. Ears and eyes are small, the latter of dark brown colour. His disposition is tractable and affectionate, especially with children.

The lesser Newfoundland or Labrador dog is all black. From it has sprung by intercrossing the curly-haired black retriever (*q.v.*). See Dog colour plate.



Newgate, London. The old gaol, from the church of S. Sepulchre, showing corner of Newgate Street and the Old Bailey, from a print of 1800. Top, right, New Gate, a 17th century view of the City gate, which once served as a prison

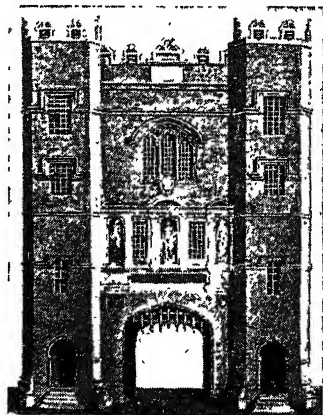
**Newfoundland Regiment, ROYAL.** Regiment recruited in Newfoundland in 1914, which served in Gallipoli and France. It was granted the prefix Royal in 1918, and disbanded in 1919. In 1940, another Newfoundland unit, the 166th (Newfoundland) Field Regiment, Royal Artillery, was raised in the Dominion for service in the Second Great War. It went to N. Africa in 1943 and served throughout the Tunisian campaign and in Italy, France, and Germany. It was disbanded in 1946.



Newfoundland Regiment badge

**Newgate.** Former gaol in the city of London. A gaol stood on the same site for almost 1,000 years, and records go back to the time of King John. The prison was then in the gate house, *i.e.* New Gate, as was the rule in medieval times.

A new prison was begun in 1420, burnt down in 1666, rebuilt upon the same lines, and again rebuilt 1778-80, only to be partly destroyed by fire during the Gordon Riots, 1780. Reconstructed in 1857, the gaol was taken over by the government from the city authorities in 1877; three years



later it ceased to be a place of detention, and in 1903-04 was demolished, its site being now occupied by the Central Criminal Court.

In 1783 the public gallows were removed from Tyburn to the outside of Newgate, and there executions took place until 1868, when an Act ordered all

hangings to be carried out within the walls of prisons. The last man to be hanged in front of Newgate was the Fenian, Michael Barrett, May 26, 1868, and the last criminals executed within its walls were Milsom and Fowler, 1896. Vast crowds assembled to see the executions, and large sums were paid for seats. See Central Criminal Court; Old Bailey; consult *Chronicles of Newgate*, A. Griffith, 1884; *Trials from the Newgate Calendar*, 1907.

**New Glasgow.** Town of Nova Scotia, Canada. It stands on the East river, 105 m. N.E. of Halifax, and 3 m. from the coast at Pictou Harbour. There are large coal mines in the neighbourhood, and the industries include iron and steel works, a car company, and works for making bricks, tools, etc. A branch line of the C.N.R. carries the coal for export to Pictou Landing. Pop. 9,210.

**New Goa or PANJIM.** Capital of the Portuguese possessions in India. Known also as Nova Goa, it is the seat of an R.C. archbishop, and is on the W. coast of the Deccan. Pop. 7,500.

**Newgrange Monuments.** A Bronze-age cemetery of 17 grave-mounds in the Boyne valley, co. Meath, Eire. At Newgrange a round cairn, 315 ft. across, 70 ft. high, has a megalithic retaining wall, and a stone circle of 12—once 30—menhirs. A 63-ft. gallery leads to a corbelled chamber with three side-cells. Spiral and other designs suggest Aegean influence; some probably represent a female divinity. See *Maeshowe*.

**New Guinea.** An island of the Pacific Ocean. Situated just south of the equator, it lies in the East Indian archipelago and belongs physically to the islands which festoon the N.E. coast of Australia, from which New Guinea is separated by Torres strait. Covering an estimated area of 311,000 sq. m., the island consists of central and northern mountain ranges with lower hill country to the S. and alluvial valleys on the coasts. Some of the mountains have glaciers, Mt. Carstens (16,400 ft.), the highest point on the island, having two. The country is very rugged, with thick scrub and jungle. The tropical climate makes the island generally unhealthy for Europeans. Except in the immediate vicinity of the larger towns there are few roads; there are only foot-tracks in the interior. There are no rlys., the principal means of communication between the towns, which are

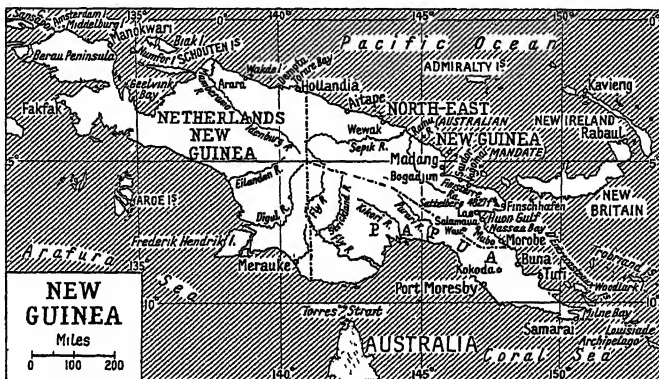
mostly on the coast, being by sea. The Fly river is navigable for 500 m. by small vessels.

Although the flora and fauna are distinctly Australian in type, the native pop. is neither Asiatic nor Australian, but akin to the Melanesians of the neighbouring South Sea is. The native pop. is estimated at 1,178,458, and there are 8,587 Europeans and some 2,000 Chinese. Coconuts, rubber, sisal, and cotton are produced and exported, and there are deposits of copper and gold, barely exploited.

Politically, New Guinea is divided into two main divisions, the eastern half being British, the western half Dutch. The British

Australian administrator of Papua and appointed by the gov.-gen. of Australia.

Under European rule, many of the former savage and head-hunting tribes have settled down to peaceful pursuits on the coconut and rubber plantations, 63,500 acres of which are normally under cultivation. Papuan exports to Australia enjoy a preferential tariff, and to encourage local industry natives are obliged to plant their lands or establish communal plantations. Education is compulsory for native children where English-speaking schools are available, and a family bonus is paid to native mothers. Internal



New Guinea. Map of the largest island in the East Indian Archipelago

area is in two parts; British New Guinea (or Papua) in the S.E., and N.E. New Guinea, held by Australia under U.N. trusteeship.

British New Guinea or Papua includes the islands of the d'Entrecasteaux and Louisiade groups and all other islands between lat. 8° and 12° S. and long. 140° and 155° E. It has an area of 90,500 sq. m., including the adjacent islands, 2,754 sq. m., pop. 301,500 (1,500 European). The annexation of Papua by the govt. of Queensland in 1883 was not sanctioned by the British govt. Next year, however, a British protectorate was proclaimed, and in 1887 the govts. of Queensland, Victoria, and New South Wales undertook to defray administrative costs; the following year Papua was annexed to the crown. The Australian federal govt. took over control in 1901, and the territory of Papua was proclaimed in 1906. Local government is by an executive council of five to nine members, one of whom is chosen from the non-official members of the legislative council, nominated by the

expenditure is met from local revenue, chiefly from a poll tax, assisted by a subsidy from the Australian govt. The principal towns and ports are Port Moresby, Samarai, Kulumadai, and Daru. There is a monthly steamer service, and a twice-weekly air service from Australia.

Australian-governed New Guinea was acquired by Germany in 1884 and named Kaiser Wilhelmsland. The territory has an area of 93,000 sq. m. and an estimated present pop. of 672,958 (4,087 European). The Germans did little to exploit the country's natural resources, and did not explore far into the interior. The territory was occupied by Australian troops in Sept., 1914, and was mandated to Australia by the League of Nations in Dec., 1920. Many of the tribes remain outside official control. Coconuts are the staple product, but there is little trade or industry. Rabaul, New Britain, capital of the mandated area until the Japanese invasion in 1942, was so badly damaged during the Second Great War that it was decided in 1946 not to rebuild it.



After the Japanese invasion early in 1942, civil administration in Papua and Mandated New Guinea was suspended and government transferred to the Australian military forces. In Oct., 1945, the territories were temporarily transferred to the control of a provisional administration of Papua and New Guinea pending a decision as to the future administration of the mandated territory. In Aug., 1946, the United Nations placed the mandated territory under the trusteeship of Australia, and permitted that country to undertake any defensive measures necessary for its protection. The trusteeship agreement also established Australia's right to bring the territory into a customs or administrative union with other Australian-controlled territories.

**NETHERLANDS NEW GUINEA.** This comprises more than half the main island, and includes the Schouten Is. at the entrance to Geelvink bay. A treaty between Holland and England in 1660 gave the Dutch East India co. rather vague rights over the territory, to which the Dutch govt. succeeded, and Dutch sovereignty was admitted by the British in the convention of 1814. The coast was mapped with fair accuracy by A. R. Wallace and others during the 19th century. The interior has not been fully explored, though military operations in the Second Great War led to extensive journeyings in it. Mountains that have been named include the Arfak, Orange, Nassau, and Charles Louis ranges; the lower courses of the rivers Mamberano, Digul, Merauke, etc., are known, and close to Santani lake, scarcely known before, the Japanese constructed two airfields.

Much of the area is virgin jungle. The natives cultivate rice, sugar-cane, maize, and yams, but there is virtually no commerce or industry; the people generally live in a wild state. Marsupials, birds of paradise, emus, and trepang are typical fauna. Except in the vicinity of the Dutch settlements, of which Hollandia (developed by the Americans during the Second Great War), Merauke, Kaimana, Kokas, and Fakfak are the principal, there are no roads.

Netherlands New Guinea was administered from The Hague after the Second Great War; plans were made for the immigration of displaced Indonesian-Dutch from Indonesia in order to develop the agricultural and mineral resources

of the country; coal has been found. Area, 151,789 sq. m. Pop. (est.) 195,000 (3,000 European).

**SECOND GREAT WAR.** New Guinea was a main objective of the Japanese in the Second Great War as a base from which to invade Australia. Under the terms of the mandate, Australia was not allowed to fortify the mandated area. Japan occupied Rabaul (New Britain) and Kavieng (New Ireland) on Jan. 23. Using Rabaul as a base, Japanese landed on New Guinea on March 8 at Lae and Salamaua, and two days later at Finschhafen. An intended assault on Port Moresby was prevented by the naval battle of the Coral Sea (*q.v.*) in May. On July 21, however, some 2,500 Japanese landed at Gona on the N.E. coast of Papua and immediately began to advance across the Owen Stanley range towards Port Moresby, which they had frequently bombed.

#### Japanese Threat to Australia

The town was garrisoned by the Australian 6th and 7th infantry divs. A small Australian detachment stationed at Kokoda on the N.E. side of the range, the first to make contact with the enemy, fought a gallant delaying action; but it was almost impossible to reinforce the advance troops along the primitive tracks leading through the range, and by Sept. 15 the Australians were driven back to the Iorabaiwa Ridge, 32 m. from Port Moresby and the last defensive position before that town.

Meanwhile, another Japanese landing on Aug. 25 at Gili Gili, at the head of Milne bay in the S.E. of the island, had been beaten off, after four days' bitter fighting, by the R.A.A.F. and Australian infantry.

The difficulties in terrain which had prevented reinforcement of the Australians now told against the Japanese; and on Sept. 30 they were forced back from Iorabaiwa Ridge, the Australians launching a counter offensive with U.S.A.A.F. support which recaptured Kokoda on Nov. 2 after protracted and bitter fighting, and drove the Japanese from Gona on Dec. 9, from Buna Dec. 14.

These operations removed the immediate danger to Australia; they were also the first major defeat of the Japanese in jungle fighting, and ended the myth of their invincibility in this type of warfare. By Jan. 23, 1943, the Australians had completely cleared the enemy from Papua, and were advancing into the mandated

territory, where the Japanese held strong bases at Lae and Salamaua and many local positions. During Jan. there was a violent battle for Wau (administrative h.q. of the Morobe goldfields), which had remained in Australian hands, and the Japanese were repulsed. A Japanese convoy carrying 15,000 men to New Guinea was destroyed in the battle of the Bismarck Sea, March 1-3, and other reinforcements were continually intercepted, while Australian ground forces steadily pushed the Japanese back on Salamaua.

On June 30 U.S. troops landed at Nassau Bay, 11 m. S. of Salamaua, making contact with the Australians at Mubo, captured July 15. By Aug. 9 the Australians had captured Kela Ridge, overlooking Salamaua. On Sept. 4, Australian and U.S. troops landed at Lae; while U.S. parachutists, watched by Gen. MacArthur, landed in the Markham valley on the 5th and 6th. Salamaua was captured on Sept. 14, Lae two days later. On Sept. 22, new Allied amphibian landings were made near Finschhafen, captured by the Australian 9th infantry div. Oct. 2. With the capture of the airfields in this area, Allied control of Huon Gulf and the Vitiaz strait (between New Guinea and New Britain) was assured. Australian troops captured the 4,827 ft. Sattelberg on Nov. 26 and then began an advance along the coast, meeting at Vagomai on Feb. 11, 1944, U.S. troops who had landed at Saidor on Jan. 2.

#### Allied Victories

Other Australian troops had meanwhile been driving the Japanese from the Markham and Ramu valleys into the Finisterre range, which they crossed against fierce enemy resistance in Dec., 1943, to capture Bogadjim, April 14, Madang, April 24. Allied landings on April 22 at Aitape in mandated territory and in the Humboldt bay area in Netherlands New Guinea split the Japanese into sections. In mid-July one strong group trapped between Aitape and Wewak attempted to break through to the coast, but was repulsed with heavy loss and driven back into the mts. Wewak itself was not captured until May 14, 1945, its harbour falling only on June 5.

The landing on April 22, 1944, by U.S. and Netherlands troops at Hollandia on Humboldt bay was followed by the capture of Hollandia (then a village) next day, of the Japanese airfields near Lake Santani on the 25th, and of

Hollandia airfield on the 27th. Netherlands civil administration was at once restored and extended as further areas were retaken. U.S. troops made new landings at Torare bay and Dempta on May 5, on Wakde I. and at Arara on May 17. Wakde was secured by the 19th; its good airstrip gave the Allies command of Geelvink bay, and on May 27 a U.S. force invaded Biak, one of the Schouten Is., where there was a fierce tank battle for the Mokmer airfield, captured on June 7. Biak was cleared, except for a few isolated groups of Japanese, by June 20. Noemfoor I. was seized July 1, and on July 30 the Allies landed at Cape Sansapor, near the western tip of New Guinea, the islands of Amsterdam and Middelburg being seized at the same time. The Japanese garrison by-passed at Manokwari surrendered only after the Allied occupation of Morotai on Sept. 17. There were no further major operations in Netherlands New Guinea.

The Japanese ceased fire in New Guinea, Aug. 22, 1945, Lt.-Gen. Adachi commanding the Japanese 8th army there surrendering at Wewak, Sept. 13, to Maj.-Gen. Robertson, commanding the Australian 6th div. See Pacific War. *Consult* New Guinea Gold, E. Demaitre, 1938; A Letter from N.G., V. Haugland, 1944; New Guinea Diary, G. H. Johnston, 1944; New Guinea Head-hunt, C. Mytengen, 1947.

**New Hampshire.** State of the U.S.A. It has a 19-m. stretch of coast on the Atlantic, and is bounded N. by Quebec, Canada, E. by Maine, S. by Massachusetts, W. by Vermont. One of the 13 original states, it has an area of 9,304 sq. m. Its uneven surface attains an alt. of 6,288 ft. in Mt. Washington, one of several peaks of the White Mts. which exceed 5,000 ft. These mts. form one system with the Franconia and Sandwich Mts., and include the highest points of the N.E. Appalachians. In this area are some leading skiing resorts.

The "granite state" is drained chiefly by the Merrimac in the centre, Androscoggin in the N., Connecticut on the W. frontier, Piscataqua on the S.E. border, and the Saco. These streams provide abundant water power for industry. There are some 1,300 lakes, the largest being Winnepesaukee. Agriculture, once the premier industry but now second to manufacturing, yields chiefly dairy products, livestock, and

poultry. Hay, maize, potatoes, oats, and fruit are cultivated. Manufactures include boots and shoes, cotton and woollen goods, paper and pulp, lumber, iron and steel products. Mica, feldspar, and beryllium occur. Three rlys. with a mileage of 1,086 serve the state. At Durham is the state university, founded 1866. Two senators and two representatives are sent to congress. Concord (the capital) is a smaller city than Manchester and Nashua. Pop. est. 457,000.

The first settlement was made in 1623, where Rye now stands. The district was part of a grant of land made to John Mason and named after his home county, Hampshire; other settlements had been planted, and a dispute began between the company of Massachusetts and Mason's heirs over the boundary. Charles II made New Hampshire a separate province in 1679, but up to the outbreak of the War of Independence disputes with Massachusetts continued. New Hampshire was the first colony in 1776 to establish a government independent of Great Britain. *Consult* History of N.H., H. H. Metcalf, 1926.

**New Harmony.** Market town of Indiana, U.S.A., in Posey co. It stands on the Wabash, on the Illinois border, 17 m. N.N.W. of Mount Vernon, and is served by rly. It was settled in 1814 by a German community of religious socialists known as New Harmonists, from whom it was acquired in 1824 by Robert Owen for a socialist experiment. After the Civil War it was visited by Audubon, the ornithologist, and Lyell, the geologist. During 1839-56 it was the h.q. of the U.S. geological survey. Pop. 1,390.

**Newhaven.** Seaport and urban dist. of Sussex, England. It stands at the mouth of the Ouse, which

divides the town, about 9 m. E. of Brighton, and has two rly. stations, town and harbour. The chief building is S. Michael's church, with Norman tower and chancel, restored and enlarged in the 19th century. Newhaven has a good harbour,



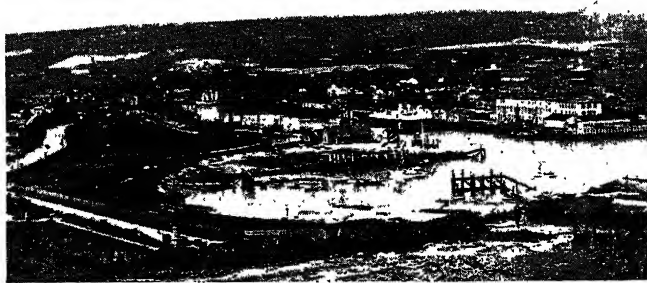
Newhaven arms

covering about 30 acres, whence steamers go regularly to Dieppe and other ports, carrying passengers and goods. There is a coasting trade, while shipbuilding is an industry. Off the port is one of the best roadsteads of the S. coast. Fishing and bathing are available.

Formerly known as Meeching, Newhaven received its present name when the harbour was begun soon after 1710. It soon became a prosperous port, and, after a period of decay, revived in the 19th century. Pop. 7,047.

**Newhaven.** Seaport of Midlothian, Scotland, since 1920 included in the city of Edinburgh. It stands on the S. side of the Firth of Forth, 2 m. N. of Edinburgh with a rly. station. It received its name from the harbour built here about 1490. Fishing is the principal industry.

**New Haven.** City of Connecticut, U.S.A., co. seat of New Haven co., second largest city, and chief seaport, of the state. It stands at the head of New Haven Bay, 4 m. from Long Island Sound, 70 m. N.E. of New York, on the New York, New Haven, and Hartford rly. (the yards of which here cover 900 acres), and has a municipal airport. The Quinnipiac, Mill, and West Rivers flow into the bay, and the port, formerly a whaling centre, receives coal, petroleum, and lumber, but ships little. New Haven is the seat of



Newhaven, Sussex, showing the harbour used for daily cross-Channel traffic

Yale university, Hopkins grammar school, Albertus Magnus college for women, and Arnold college.

Picturesque New Haven has a 16-acre green on which stand three notable churches built about 1815 (one inspired by S. Martin-in-the-Fields, London, England). Here are Yale university buildings and others of architectural or historic interest. The city makes hardware, electrical equipment, ammunition and firearms, clocks, packed meats, and cutlery.

A party of Puritans settled here in 1638, and established a theocratic community which was first called Quinnipiac, the name being changed in honour of New-haven, Sussex, in 1640. The New Haven colony, augmented by other towns, was absorbed by the Connecticut colony in 1664. Captured and sacked by the British in 1779, New Haven was the joint capital of the state from 1701 to 1873, and was chartered as a city in 1784. Pop. 160,605.

**New Hebrides.** Group of islands in the Pacific Ocean. They lie between Santa Cruz Islands on the N. and the Loyalty Islands on the S., the Fiji Islands being on the E., and the Coral Sea on the W. The parallel of 15° S. crosses them. The principal islands of some 30 are Espiritu Santo, Malekula, Epi, Efate or Sandwich, Erromanga, Tanna, Aneityum, and Ambrym, and all are administered by British and French officials under the Anglo-French convention of 1906.

Wooded or covered with luxuriant vegetation, many of volcanic origin, some of the islands are mountainous with a moist, unhealthy climate. They produce copra, bananas, sugar cane, sago, rubber, tortoiseshell, sandalwood, and coffee. The import of ammunition and the import and distillation of spirits are prohibited. There are R.C. and Presbyterian missions on the islands, but cannibalism is not extinct. Trade is mostly with Sydney and New Caledonia. Discovered by Quiros in 1606, the islands were visited and named by Cook in 1774. The French in this condominium were the first to declare for De Gaulle, July 20, 1940. The area is about 5,700 sq. m., and the pop., chiefly Melanesian, is est. at 41,000.

**New Iberia.** City of Louisiana, U.S.A., the capital of Iberia co. It stands on the Bayou Teche, at the head of its navigation, 130 m. W. of New Orleans, and is served by rlys. Manufactures include foundry and machine-shop products, railway wagons, and soap.

Sugar, cereals, and fruits are cultivated locally, and salt is also obtained. New Iberia was settled by Spaniards in 1785, occupied by the British in 1816, and became a city in 1839. Pop. 13,747.

**Newington.** Name of a parish of the London bor. of Southwark, and of several other parishes in England. That on the Thame, 9 m. S.E. of Oxford, contains an ancient church, S. Giles's, with a 14th century tomb. Newington, Kent, 8 m. E. of Rochester, also has an old church, S. Mary's, a Decorated flint structure, with lofty Perp. west tower. At South Newington, a village 6 m. S.W. of Banbury, Oxon, the church of S. Peter contains some notable Norman, E.E., and Perp. work. See Southwark.

**Newington Butts.** London thoroughfare. Linking Kennington Park Road with Newington Causeway, Southwark, S.E., it contained the Metropolitan (Spurgeon's) Tabernacle, built 1860-61, rebuilt 1898, and destroyed by German bombs in the Second Great War; the memorial clock-tower and churchyard of S. Mary, Newington, a church demolished in 1876; and still has the modernised Elephant and Castle inn, once a coaching rendezvous. This gives its name to a congested road junction and the terminus of the Bakerloo rly. Near the inn Joanna Southcott (q.v.) set up a meeting-house. The name Newington Butts is derived from an old archery ground, and from that of a family once owning an estate here.

**New Ireland.** Island of the Bismarck Archipelago (q.v.). It is separated from New Britain by St. George's Channel. Long and very narrow, it is mountainous in the S. and level in the E. There are extensive forests, but the climate is unhealthy. The natives are a type of Melanesians. As Neu Mecklenburg, it was part of a German protectorate until 1914. Australia governed it from 1921 under mandate and trusteeship. Kavieng is the chief town and Nusa the harbour. Before attacking New Guinea in 1942 the Japanese wanted to obtain bases close to that island, and having bombed Kavieng, occupied it on Jan. 23. Though the town was bombed and shelled on several occasions, no landings were made by the Allies. Area, 3,800 sq. m. Pop. 37,394. See New Guinea.

**New Jersey.** Middle Atlantic state of the U.S.A. and one of the 13 original states. It has an area of 7,836 sq. m., but despite this

comparatively small size ranks ninth by pop., with 4,160,165. The surface in the N. is crossed by ridges and mts. of the Appalachian system, the centre is generally level, and the S. slopes towards a coastal plain, where resorts like Atlantic City attract thousands of visitors. Important rivers include the Delaware, Hudson, Passaic, Raritan, and Hackensack. Manufacturing centres are Paterson, Elizabeth, Bayonne, and Hoboken. Notable for the diversity of its industries, New Jersey has petroleum refining, copper smelting, ship-building, fruit canning, meat packing, and makes electrical machinery, chemicals, paints, varnishes, and dyestuffs. It ranks second in zinc production, while iron ore is plentiful. Agriculture and forestry flourish, while the proximity of New York has been responsible for the development of market gardening. Eight rly. systems cover 2,132 m. Newark airport is one of the world's largest.

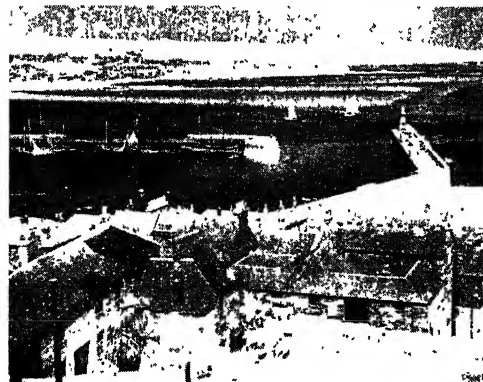
Two senators and 14 representatives are sent to congress. The capital is Trenton, but Newark and Jersey City are much bigger. Educational institutions include Princeton, Rutgers, Newark, and Drew universities. Morristown national historical park (958 acres) contains the site of the base hospital of the American army during the Revolution and of its main camp during the winter of 1776-77 and 1779-80.

The first settlers were Dutch who arrived about 1620. The Swedes followed, but in 1655 their settlements passed to the former. During the Dutch Wars the English took possession of the district, and the name of New Jersey was given because one of those to whom the land was granted by the duke of York was Sir George Carteret, the former governor of Jersey. Later part of the territory came under the control of the Society of Friends, including Penn. In 1702 E. and W. Jersey were placed under the same governor and united as a crown colony until the outbreak of the War of Independence, in which New Jersey was the scene of 100 battles and skirmishes. Consult The Story of New Jersey, W. S. Myers, 1945.

**New London.** City and port of entry of Connecticut, U.S.A., and a co. seat of New London co. It stands on the Thames R., 3 m. above Long Island sound, 50 m. E. of New Haven, and is served by several rlys., by steamer, and by Groton airport. The harbour is one of the deepest on the Atlantic

coast; a shipbuilding centre from the 18th cent., it sheltered many privateers during the Revolution. In the 19th cent. it had a whaling fleet. An industrial centre, the city exports motor cars and imports lumber. It is the seat of the U.S. Coast Guard academy; while Groton (pop. 4,719) on the opposite bank of the Thames is the U.S. navy's Atlantic submarine h.q. A summer resort and yachting centre, New London is the scene of the annual Harvard-Yale boat race. Educational institutions include the Connecticut College for women. The city, first settled 1646, was incorporated 1784. Pop. 30,456.

**Newlyn.** A fishing village on Mounts Bay, 2 m. S.W. of Penzance, Cornwall, England. Its situation has made it a resort of artists, but it is also a fishing centre, with a good harbour protected by huge granite piers. Pilchards and mackerel are caught. The church is dedicated to S. Peter.



Newlyn. The harbour of this small Cornish fishing village

Newlyn has been part of the bor. of Penzance (*q.v.*) since 1934. Pop. est. 5,000.

**Newlyn School.** Colony of British artists settled about 1880 at Newlyn, Cornwall. The aim was to encourage work in the open air, and a fidelity to everyday life among the Cornish fishing folk. Pioneers of the colony included Walter Langley, H. S. Tuke, Edwin Harris, and Stanhope Forbes, whose topographical studies of the neighbourhood influenced many students. After the original impetus of the group had declined Newlyn continued to attract artists, possibly because of the unusual studio facilities. Later painters to work there included for a time Ernest and Dod Procter and Harold and (Dame) Laura Knight.

**Newmains.** Town of Lanarkshire, Scotland. It stands on the coalfield, 2 miles E. of Wishaw. The chief occupations are in the coal mines, the Coltness ironworks, and the Morningside brickworks. Pop. 7,000.

**Newman, ERNEST** (b. 1868). A British music critic. Born Nov. 30, 1868, he was educated at Liverpool university, and after abandoning a career as Indian civil servant, joined the staff of Midland institute at Birmingham in 1903. Two years later he became music critic to the Manchester Guardian, and in 1906 to the Birmingham Post, resigning in 1919 when he settled in London. As critic to the Sunday Times he became one of the most incisive



Ernest Newman, British music critic

writers on music of his day. He wrote extensively on Wagner, *e.g.* *A Study of Wagner*, 1899; *Wagner as Man and Artist*, 1914 (revised ed. 1924); *Facts and Fiction about Wagner*, 1931; and *a Life in 4 vols.* (1933, 1937, 1944, and 1946). He also translated a number of Wagner's librettos for the Breitkopf and Hartel edition. Newman's other publications on music included Gluck and the Opera, 1895; Elgar, 1906; Hugo Wolf, 1907; Richard Strauss, 1908; *The Unconscious Beethoven*, 1927; *The Man Liszt*, 1934; *Opera Nights*, 1943.

**Newman, JOHN HENRY** (1801-90). British theologian and cardinal. He was born in London, Feb. 21, 1801, and educated at Trinity College, Oxford, becoming in 1822 a fellow of Oriel. In 1828 he became vicar of S. Mary's, Oxford, having been in the meantime for a short period vice-principal of S. Alban's Hall.

In 1833, in conjunction with Hurrell, Froude and others, he began the publication of the *Tracts for the Times*, which inaugurated the Tractarian or Oxford movement. In the pulpit of the university church Newman was now

preaching sermons which attracted wide attention by their literary perfection, dialectical skill, and devotional tone, combined with the evident sincerity and the personal charm of the preacher. He thus exercised an almost unique influence on the younger thought of Oxford, and indirectly on the Church generally. In 1841 he published *Tract XC*, in which he argued that the 39 Articles were capable of an interpretation very different from the Protestant one usually accepted. This roused indignation, and in the following year he retired to Littlemore, and resigned the living of S. Mary's.

In 1845 Newman was received into the Roman Church, and went a year later to Rome, where he was ordained priest and made a D.D. Returning to England in 1847, he settled at Edgbaston, where he founded a congregation of the Oratory. He established the London



John Henry Newman, British cardinal

Oratory in 1850, and in 1854 became rector of the R.C. university at Dublin. During the following four years he published his *Idea of a University* and his *Lectures on University Subjects*. A controversy with Charles Kingsley resulted in his autobiographical *Apologia pro Vita Sua*, 1864, giving with candour and sincerity his reasons for becoming an R.C. In 1879 he was made cardinal. He lived in retirement at Birmingham until his death, Aug. 11, 1890.

Newman was recognized as one of the most acute thinkers of his day, and his literary style has rarely been surpassed for beauty and clarity. As a preacher he stood in the first rank, and the influence of his writings has yet to be fully estimated. His dialectical skill was unrivalled; but it was often overwhelming rather than convincing. His hymn, *Lead, Kindly Light*, and his poem, *The Dream of Gerontius*, achieved wide popularity. See *Oxford Movement*.

**Bibliography.** Letters and Correspondence, ed. A. Mozley, 1891; *The Oxford Movement*, R. W. Church, 1891; *The Anglican Career of Cardinal Newman*, E. A. Abbott, 1892; *Lives*, R. H. Hutton, 1891; W. Barry, 1904; C. G. Atkins, 1931; W. Ward, 1937; J. Moody, 1946; Newman, Faith and the Believer, P. Flanagan, 1947; Young Mr. Newman, M. Ward, 1948.

**Newman Prize.** Naval prize founded in memory of Edward Newman, R.N., one-time chief engineer of Portsmouth dockyard. From the interest upon £400 a prize of books or scientific instruments is awarded annually to the lieutenant (E.) who obtains first place in practical engineering at the Royal Naval engineering college, Devonport.

**Newmarch, WILLIAM** (1820-82). British statistician. Born Jan. 28, 1820, at Thirsk, he entered a bank, and then an insurance office in London. During 1862-81 he held a high position in the banking house of Glyn, Mills and Co. He died March 23, 1882. Newmarch did a great deal of work for the Royal Statistical Society, and he assisted T. Tooke in writing a standard work, *The History of Prices*. The Newmarch lectureship at University College, London, commemorates him.

**Newmarket.** Urban dist. and market town, partly in Cambridgeshire and partly in Suffolk, Eng-

land, whose residence in the High Street is still shown. Market day, Tues. Pop. 9,753. *See* Horse-racing; *consult* Royal Newmarket, R. C. Lyle, 1946.

**New Mexico.** S.W. state of the U.S.A. It has an area of 121,666 sq. m. and ranks fourth in size among the states. The surface is crossed by detached ranges of the Rockies, but in the S.E. is a barren plain, the whole comprising part of a great plateau with a minimum elevation of 2,876 ft. Sierras and canyons are notable features and there are several peaks 12,000-14,000 ft. high. The Carlsbad caverns, in a national park of 70 sq. m. in the Guadalupe Mts., are among the deepest and most extensive in the world. The Rio Grande flows N. to S., cutting the state into two unequal portions, and farther E. is an affluent, the Rio Pecos.

Irrigation is increasingly practised, large dams including Elephant Butte. Principal industries are stock raising and farming;

the Mexican War. It became a territory in 1850, and entered the Union as the 47th state in 1912. Two senators and two representatives-at-large are sent to congress. Pop. 531,818.

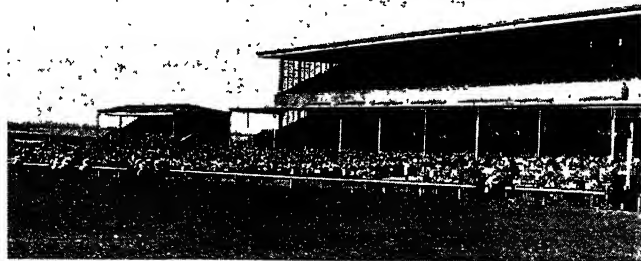
**New Mills.** Urban dist. and town of Derbyshire, England. It stands on the Goyt and Jett, 8 m. S.E. of Stockport, being served by rlys. The industries include textile printing, bleaching, and dyeing, and the manufacture of paper and sweets. Pop. 8,300.

**Newmilns.** Police burgh of Ayrshire, Scotland. It stands on the Irvine, 7 m. E. of Kilmarnock, and is served by rly. Newmilns was made a burgh in 1490, and had a castle about that time, but its prosperity dates from the introduction of lace and other textile manufactures in the 19th cent. Pop. 3,979.

**New Model Army.** Name given to the army raised in 1645 by the parliament to fight against Charles I. After the passing of the self-denying ordinance, and the consequent resignations of some leading generals, parliament raised from the existing army and by impressment a special force of 14,000 infantry and 7,000 cavalry. It was placed under Sir Thomas Fairfax, was known as the new model army, and quickly became a drilled and disciplined force. On June 13, 1645, Cromwell joined it as leader of the cavalry, and on the next day it fought and won at Naseby. The Coldstream Guards trace their descent from the new model.

**Newnes.** Town of New South Wales, Australia. It is in Cook co., on the central tableland, 35 m. N.N.E. of Lithgow. Noted for its mines of oil shale, it is the terminus of a branch line from Newnes Junction on the main western rly. from Sydney to Bourke.

**Newnes, SIR GEORGE** (1851-1910). Founder of a famous English publishing firm. Son of a Congregational minister, he was born at Matlock Bath, March 13, 1851, and after education at Silcoates and the City of London school entered the fancy goods trade. He started the weekly *Tit-Bits* (q.v.) in Manchester in 1881, and brought it to London in 1884. Later he issued *The Strand Magazine*, *The Wide World Magazine*, *The Ladies' Field*, *Woman's Life*, etc.; and in 1893 the *Westminster*

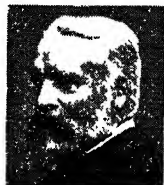


Newmarket. Finish of one of the classic races on the world-famous Newmarket Heath, headquarters of horse-racing in England

land. It is 13 m. E.N.E. of Cambridge, and has a rly. station. The headquarters of horse-racing in England, Newmarket Heath has two principal racecourses, the Rowley course and the July course; it is traversed by the Devil's Dyke. Around are numerous training establishments, and the main industry is providing for horses and the visitors frequenting race meetings. Events include the Cambridgeshire, Cesarewitch, and Two Thousand and One Thousand Guineas. The Jockey Club has its headquarters here. The buildings connected with racing include the subscription rooms, Rous memorial institute, and Astley institute. S. Mary's, an old Gothic building restored, and All Saints are the chief churches. James I made Newmarket a racing centre and built a house here, as did

cotton is the chief crop. In the desert of Los Alamos, N.W. of Santa Fé, is a centre of atomic energy research; Alamogordo air base, 125 m. S.E. of Albuquerque, was the site of the first atomic bomb explosion, July 16, 1945. New Mexico is rich in copper, while undeveloped resources include 192,000 million tons of coal and 33,000,000 tons of gypsum. Hobbs increased its pop. from 593 in 1930 to 10,619 in 1940 with the discovery of oil. Historic and scenic features include eight national monuments, among them Aztec ruins and Gila cliff dwellings. Santa Fé (q.v.) is the capital. The state university is at Albuquerque and the normal university at Las Vegas.

The area, explored by Spaniards early in the 16th century, became part of Mexico in 1821, and was ceded to the U.S.A. at the end of



Sir George Newnes, British publisher Langlier



Gazette (*q.v.*). His firm became a limited company in 1891, and in 1920 joined forces with that of C. Arthur Pearson, Ltd. Liberal M.P. for Newmarket, 1885-95, and for Swansea, 1900-10, Newnes was made a baronet in 1895. He died June 9, 1910, and was succeeded by his son, Sir Frank Hillyard Newnes, who was born Sept. 28, 1876, and went to Clare College, Cambridge. Chairman of the family firm and director of many associate houses, he was called to the bar 1898, and was Liberal M.P. for Bassetlaw, 1906-10.

**Newnham College.** College for women in Cambridge university. Founded for resident



Newnham College, Cambridge. Clough Hall and, left, Sidgwick Hall, from the south

women students in 1871 by the Newnham Hall Company, the first hall was built in 1875. Five years later the company was amalgamated with the Association for Promoting the Higher Education of Women in Cambridge, and the society was incorporated. The college includes Old Hall (the original Newnham Hall), Sidgwick Hall, Clough Hall, so named after the first principal, Anne J. Clough (*q.v.*), and Peile Hall. It is undenominational. There is accommodation for over 200 students.

**New Norcia.** Roman Catholic abbey in Western Australia. Situated 80 m. N.E. of Perth, it was founded in 1846 by two Spanish Benedictines who came to undertake a mission to the aborigines. Originally called Nursia, after the birthplace of S. Benedict, the abbey was established in desolate scrub country and completed in 1850. It became the centre of outstanding work in converting and civilizing the aborigines, and now has within its spiritual jurisdiction an area of 16 sq. m. with an R.C. pop. of 3,000.

**New Order.** Name coined by the German National Socialists in 1940 for the regime they had decided to impose on occupied countries of Europe. The Germans were naturally to be the master race; nearest to them came the other Nordic races, Dutch and Scandinavian; next in order, Belgians, French, Czechs, and

Poles. Each country's economy was to be organized to Germany's advantage, but a degree of self-government was promised to those nations that merited it. In 1941 the Japanese produced a scheme for a new order in Asia on comparable lines.

**New Orleans.** City and port of Louisiana, U.S.A. The capital of Orleans parish and the largest city and the commercial capital of the state, it stands mainly on the left bank of the Mississippi, 107 m. from its mouth, and is served by Southern Pacific and other rlys. Much of the land bordering the city proper is marshy and below the level of the river at high tide,

necessitating the building of levees, which extend along the city front and for many miles. The city covers about 200 sq. m., but the inhabited portion is only about 40 sq. m. It has 27 m. of frontage, on both banks of the river, which at a point opposite Canal Street is half a mile wide and from 40 ft. to 200 ft. in depth. Over this waterway more than 16,000,000 short tons of products, valued at one billion dollars moved in and out from the sea in 1939.

The streets in the central part are mostly narrow, but in the suburbs are broad and lined with trees. Canal Street, which separates the picturesque old French section from the newer commercial part, is the principal business

thoroughfare. Open spaces are Audubon Park of 250 acres, City Park of 216 acres, and Jackson, Beuregard, and Lafayette Squares. N. of the city the river nears Lake Pontchartrain, with which it is connected by a 6-mile canal.

With few exceptions the public buildings lack architectural splendour. The most noteworthy are the cathedral of S. Louis, a Creole-Spanish structure erected 1794, the archbishop's palace, dating from 1737, the granite custom house near the E. end of Canal Street, and the cotton exchange.

Institutions for higher education include Tulane university, known formerly as the university of Louisiana, with faculties of law, arts and sciences, medicine, and technology; Loyola (R.C.) university, which broadcasts daily; Dillard university for coloured students; the Ursuline academy, founded 1730; and the Jesuit college, opened 1847. The French Opera House, the principal place of entertainment, dates from 1859. A carnival is held on Shrove Tuesday (Mardi-Gras).

The cemeteries are a remarkable feature of New Orleans. The soil is so saturated with water that burial beneath the surface is not possible, and vaults with arched cavities are used, the coffins being ranged one above the other in tiers, 12 ft. above the ground level.

New Orleans is one of the most important commercial cities of America, and, after Liverpool, the foremost cotton port of the world. It has also flourishing manufactur-



New Orleans, Louisiana. Plan of the central districts of the city, showing the principal quays on the Mississippi



New Orleans, Louisiana. 1. Looking down Charles Street from Lee Circle towards Canal Street. The stone column is surmounted by a statue of Robert E. Lee. 2. Dumaine Street, in the old French quarter. 3. Jackson Square, with the cathedral of St. Louis, built 1792-94. 4. Air view of the city and the Mississippi river

ing interests. Sugar refining is a leading industry, and machinery, cotton goods, cotton-seed oil, boots and shoes, cigars, and furniture are produced. Economic life is largely carried on by Americans of Jewish descent; political life by Catholics of Irish and French.

Settled in 1717 by the French, who named it after the duke of Orleans, then regent of France, New Orleans was later deserted, but resettled in 1722. It became the seat of government of the French territory of Louisiana, and continued to flourish after its cession to Spain in 1763. In 1800 it fell to France, from whom it was purchased by the U.S.A., together with the remainder of Louisiana, in 1803, and ten years later was incorporated, having become a port of entry. It was the capital of Louisiana down to 1849, when it was superseded by Baton Rouge, and again during 1864-80. In 1815 the British made an unsuccessful attack on the city. Pop. 494,537.

**New Party.** Political party founded by Sir Oswald Mosley (*q.v.*) in Feb., 1931. He had laid down the principles of his political beliefs in a manifesto published in Dec., 1930; and when he found his views diverging fundamentally from those of the Labour party, he and five other Labour M.P.s broke away and formed the New Party as an Independent group. Of 23 candidates at the 1931 general election, not one secured election although they supported the National government. The party then collapsed.

**New Plymouth.** Town of New Zealand. Situated on the S.W. coast of N. Island, N. of Mt. Egmont, it is the chief town of the Taranaki dist. It is a centre for the cattle-rearing and dairying industry of the dist., and is connected by rly. via Marton Junction with both Wellington and Auckland. The first settlement was made by the pioneers of the New Plymouth Co. in 1841. Pop. 20,642.

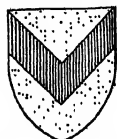
**Newport.** Mun. borough and market town, also the capital, of the Isle of Wight. It stands on the Medina, near the centre of the island, 8 m. S. of Ryde, and is served by the island rlys., of which it is the headquarters. The chief building is the church of St. Thomas. Rebuilt in the 19th century, it contains some memorials from the older building, and a monument to Princess Elizabeth, daughter of Charles I. There are a guildhall, corn exchange, museum, a grammar school dating from 1612, and a blue-coat school for girls, founded in 1761.

In the grammar school, Charles I made the treaty of Newport. God's Providence House is an interesting old building.

The industries include brewing, and the town is a centre for the general trade of the island. Newport was at one time a port, and in the 12th and succeeding centuries its citizens obtained various privileges, while it took the place of

Carisbrooke as the island capital. In 1607 it became a chartered town, and from 1584 to 1885 was separately represented in Parliament. Market days, Tues. and Sat. Pop. est. 20,000.

**Newport.** County and mun. borough, seaport, and market town of Monmouthshire, also the largest



Newport, Monmouthshire, arms

town. It stands on the Usk, 4 m. from its mouth, and is 12 m. from Cardiff and 133 by rly. from London. The town is chiefly on the W. side of the river; on the E. is the suburb of Maindee, included in the borough in 1889. The chief buildings are the church of S. Woollos, some parts of which are Norman and others Perpendicular, the town hall, the offices of the county council, art gallery, and museum and market hall. Others include the technical college, the civic centre in Clytha Park, and the Royal Gwent Hospital. There are remains, including two towers, of a castle, remodelled in 1424, after having been burned by Owen Glendower. S. Woollos church is the pro-cathedral for the diocese of Monmouth.

Newport does a large shipping trade, mainly in coal and iron, for which it has modern docks, covering 160 acres. Other industries are shipbuilding, brass and iron founding, and the manufacture of galvanised iron sheets, steel tubes, nails, engines, boilers, chemicals, railway plant, glass, pottery, etc. A transporter bridge, consisting of 2 steel lattice towers 240 ft. high, with a platform running between, crosses the Usk.

Newport owes its origin to its position on the borders of Wales, a castle having been built here about 1200. The townsmen obtained a guild merchant and other privileges, and in 1624 it was made a corporate town. Its modern growth began with the opening of the S. Wales coalfield, and large extensions of docks were made in the 20th century to cope with the increasing trade. On Nov. 4, 1839, there was a serious rising of the Chartists here.

The name of new burgh was given to the place about 1100 to distinguish it from the older Caerleon, and it became Newport. Since 1839 it has been governed by a mayor and a corporation on modern lines. From 1832 to 1978 it united with Monmouth to send a member to parliament, while from 1918 it has been represented

separately. Market days, Wed. and Sat. Pop. est. 100,000.

**Newport.** Police burgh of Fife, Scotland. It stands on the Firth of Tay, 1½ m. S.E. of Dundee, of which it is practically a residential suburb. It is served by rly. while a ferry connects it with Dundee across the Tay. Pop. 3,320.

**Newport.** Seaside resort of Pembrokeshire, Wales. It stands on Newport Bay, at the mouth of the Nevern, 10 m. from Cardigan and 6 m. from Fishguard. About 1300 a castle was built here, and it was at one time a flourishing port and a centre of the woollen manufacture, but after 1700 it began to decay, and lost its market rights and its position as a chartered town. There is a small harbour, but it is not easy of access.

**Newport.** Market town and urban district of Shropshire. It stands on the Shrewsbury canal, 17 m. from Shrewsbury and 145 m. by rly. from London. The chief building is the rebuilt church of S. Nicholas, and there are a town hall, corn exchange, and grammar school of 1665, also an old market cross. The industries include a trade in agricultural produce and the manufacture of farming implements and valves.

Newport was founded about 1100, and the townsmen received a number of privileges, including a guild merchant. In 1551 it was made a chartered town under a high steward, and this constitution existed until 1833. In 1894 it was made an urban district. Market day, Fri. Pop. 3,738.

**Newport.** City of Kentucky, U.S.A., in Campbell co. It stands at the confluence of the Licking and Ohio rivers, opposite Cincinnati, and is served by the Nashville and the Chesapeake and Ohio rlys. The great steelworks here was the scene of a strike which began in 1921 and lasted for seven years. Settled in 1790, Newport was incorporated in 1795 and became a city in 1850. Pop. 29,744.

**Newport.** City and port of entry of Rhode Island, U.S.A., the co. seat of Newport co. Formerly the capital of the state, and now a summer resort on Narragansett Bay, 29 m. S. of Providence, it is served by the New York, New Haven, and Hartford rly. It has a secure and spacious harbour, and several naval establishments. During the period 1890–1914 it was the summer capital of wealth and fashion, its seaward drive being lined with the palaces of the millionaires. The American “400”—the social élite—were so called

because the Newport ballroom of Mrs. William Astor, leader of society, held only that number. It reflects, in its architectural styles, Rhode Island's early hospitality to dissenting sects, of which five built their earliest American churches at Newport. Settled in 1638, Newport was chartered as a city in 1784 and rechartered in 1853. Pop. 27,612.

**Newport News.** City and port of entry of Virginia, U.S.A. The Atlantic terminus of the Chesapeake and Ohio rly., at the mouth of the James river and the head of Hampton Roads, it was a small fishing village until the line was completed in 1882. A shipbuilding and dry dock company, founded here in 1896, the year of the city's incorporation, has one of the largest yards in the world, ideally situated with respect to tides, deep water, and proximity to the sea. During the First Great War about 14,000 men were employed and this number has been doubled. In 1936–37 the Farm Security Administration provided model low-cost housing on 436 acres near Newport News, a project carried out by negroes. In the city's foundries, turbines were cast for hydro-electric power plants under the T.V.A., as well as for Dnepropetrovsk, U.S.S.R. Pop. 37,067.

**Newport Pagnell.** Market town and urban dist. of Bucks, England. It stands where the Ouse joins the Ouse, 14 m. N.E. of Buckingham and 50 m. N.W. of London. The town is served by rly. and the Grand Union Canal. Electricity is supplied from Northampton. The chief building is the church of SS. Peter and Paul, dating in the main from the 14th century, with two fine porches. Among several charities is an almshouse, founded in 1280, now known as Queen Anne's hospital, after the queen of James I. The centre of an agricultural district, the town was once known for its manufacture of lace. A castle was built in the Middle Ages, but disappeared soon after it had been taken by the parliamentarians during the Civil War. Market day, Wed. Pop. 4,530.

**New Providence.** Island of the Bahamas. It lies between Andros (W.) and Eleuthera (E.), and is 19 m. long by 10 m. wide. It is covered with undergrowth and contains extensive lagoons. On its N. coast is Nassau, the seat of government of the Bahamas. This is the most densely populated of the islands, and produces fruits,

being specially noted for the pine-apples exported to England and the U.S.A. in large quantities. Settled by the English in 1629, it was permanently colonised early in the 18th cent. Pop. 29,391.

**Newquay.** Holiday resort and urban dist. of Cornwall, England. It is on the N. coast on Newquay

and chartered as a city in 1899. Population 58,408.

**New Ross.** Urban dist., market town, and river port of Wexford, Eire. It stands on the Barrow, 13 m. N.E. of Waterford, with a rly. station. On the other side of the river, in Kilkenny, is Rosbercon, part of the urban dist.



**Newquay.** Bathing beach at this popular holiday resort of North Cornwall

Bay, 14 m. N. of Truro, and is reached by rly. With a small harbour, it has a shipping trade and is a fishing port, but visitors are mostly attracted by the rugged coast scenery and bathing and surfing. Pop. 10,450.

**New River.** Artificial waterway in Herts and Middlesex, England. Fed by the Chadwell and Amwell springs in Herts, and by the Lea at Broxbourne, it extends S. about 24 m. to Stoke Newington, having reservoirs in the bors. of Stoke Newington and Hornsey. Constructed by Sir Hugh Myddelton (*q.v.*), 1609-13, at a cost of £500,000, the undertaking was acquired by the Metropolitan Water Board (*q.v.*) in 1904, when the New River Co. received as the purchase price £6,534,000 of 3 p.c. water stock, besides certain contingent rights estimated roughly at an additional £500,000. New offices of the Water Board were opened at Rosebery Avenue, on the site of the New River Head, in 1920, at a cost of £300,000.

**New Rochelle.** City of New York, U.S.A., in Westchester co. It stands on Long Island Sound, 17 m. N. by E. of New York city, and is served by rlys. Among many fine residences are mansions dating from the Dutch and English colonial periods. Leland Castle, noted for its interior decorations, is occupied by an Ursuline seminary. Here Tom Paine was buried in 1809 on land presented by the state, but his remains were taken back to England by Cobbett in 1819. The town was settled by Huguenots in 1688, incorporated in 1847,

The industries include shipping, for which there are quays along the river, tanning, and fishing. New Ross was probably built by the English settlers, and was a corporate town surrounded by walls. It was besieged by Cromwell, who destroyed the fortifications. There was fighting here during the rising of 1798. From 1574 to 1800 it was separately represented in the Irish parliament, and during 1800-85 in the British. Rosbercon, which was once a separate borough, had a monastery founded about 1200. Old Ross is a village  $3\frac{1}{2}$  m. away with ruins of a castle. Market days, Wed. and Sat. Pop. 5,800.

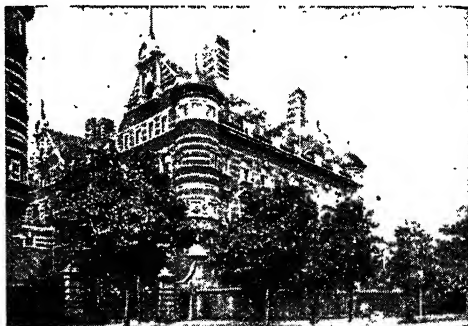
**Newry.** Urban dist., market town, and seaport of co. Down, N. Ireland. It stands on the river Newry, which has been canalised to afford access for vessels from the sea, 35 m. from Belfast and 63 from Dublin, with which it has rly. connexion. The town has a technical school. Eight bridges

cross the river here, and there are four drawbridges over the canal. An important port for the export of agricultural produce and cattle, its other industries include corn and meal mills, a large flax-spinning mill, and a spade and shovel factory. The older part of the town is separated by the river from the

newer part called Ballybot. Newry grew up round an abbey founded in 1175. It was made a chartered town soon after 1600, and until 1800 sent two members to the Irish parliament. From 1800 to 1918 it returned one member to the British house of commons; since 1918 its representation has been merged in the county. Market days, Tues., Thurs., Sat. Pop. 12,738.

**News Agency.** Organization for the regular supply of news to newspapers. Most agencies supply news of all kinds, but there are specialist agencies dealing with specific subjects, *e.g.* sporting, naval, military, aeronautical, motoring, shipping, law, finance, etc. The earliest existing news agency is Reuters (*q.v.*), which is controlled by the Press Association and the Newspaper Proprietors' Association. Reuters deals with overseas news and the Press Association with home news. Other important news agencies in Britain are the Exchange Telegraph Company and Central News. The principal news agencies in the U.S.A. are the Associated Press of America, and the United Press of America; the latter operates in Great Britain as the British United Press. Other agencies which have given worldwide coverage of events include Havas, France; Domei, Japan; and Tass, the U.S.S.R.

**News Chronicle.** London daily newspaper. Founded in 1846 as the Daily News under the editorship of Charles Dickens, it purchased the Morning Leader and the Star in 1912, the latter, an evening publication founded by T. P. O'Connor in 1888, being continued separately. In 1928 the Westminster Gazette, founded by Sir George Newnes in 1893, was absorbed, and in 1930 the Daily Chronicle, founded in 1855 as the Clerkenwell News, was amalgamated with the Daily News, which then adopted



**New Scotland Yard, London.** Headquarters of the Metropolitan Police, seen from the Victoria Embankment

its present title *News Chronicle*. The newspaper is now largely owned by the Cadbury family and is regarded as the organ of Liberal opinion. It is published at Bouverie Street, London, E.C.4.

**New Scotland Yard.** Name given to the headquarters, on the Thames Embankment, of the London Metropolitan Police. The headquarters of the police were removed from Whitehall to New Scotland Yard in 1890. The building was designed by Richard Norman Shaw (1831-1912) and is considered to be his finest work. Its telephone no., Whitehall 1212, became famous. See *Metropolitan Police*; *Police*; *Scotland Yard*.

**News from Nowhere.** Story by William Morris, first published in America, 1890, and in England, 1891, with the sub-title, *An Epoch of Rest, Being some Chapters from a Utopian Romance*. It was written as a reply to *Looking Backward* (*q.v.*), and presents socialism of a different kind, showing it in practice some two or three centuries forward from the time at which the book was written.

**New Siberia.** Name of three groups of islands (Liakhov, Anjou,

De Long) in the Arctic Ocean, in the Yakutsk A.S.S.R. The largest is Kotelnoi (Kettle Island). They are uninhabited, containing vast beds of petrified wood and fossilised mammoth bones. Area, 9,650 sq. m.

**Newsletter.** Term once applied to private letters containing news, of which the London letters in provincial and foreign newspapers are a kind of survival. Before printing was invented, letters between friends and relatives contained accounts of current events; sometimes they were written by tutors or other retainers. Then came professional writers of news, who existed concurrently with the newspapers of the 17th century, in the latter part of which they supplanted the newspapers as a result of the stringency of the licensing system applied to anything printed. These newsletters, as J. B. Williams points out in his *History of English Journalism* (1908), are more valuable sources of history than printed periodicals. Such were the Paston letters (*q.v.*) of the 15th century, and the Fugger News Letters (see Fugger) of the 16th.

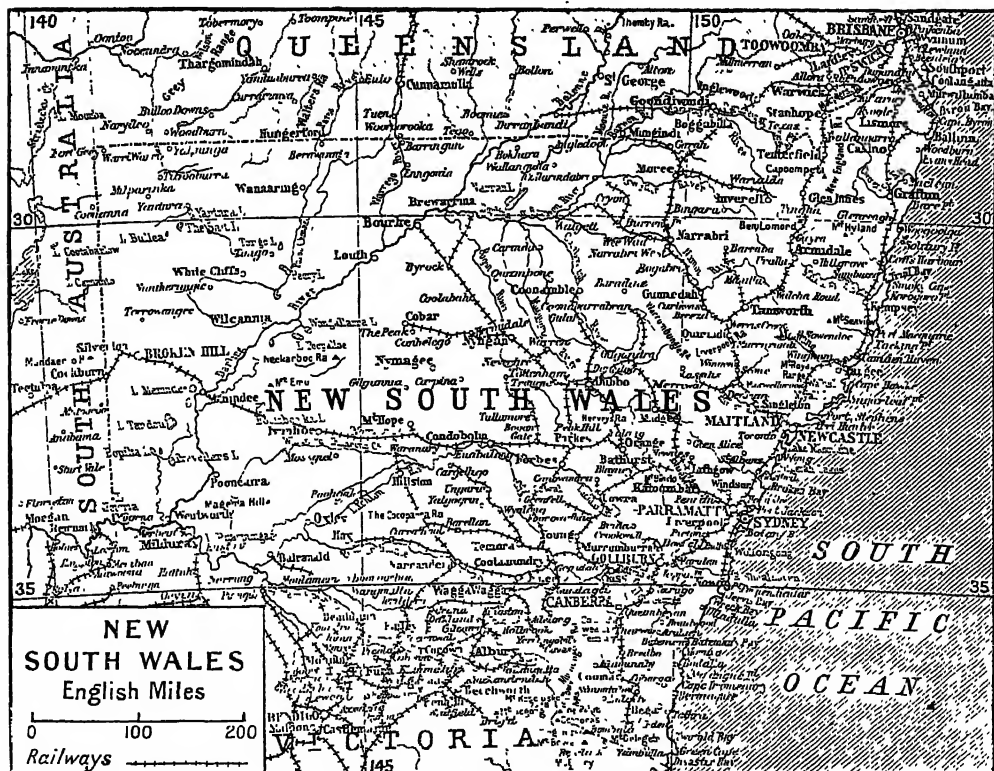
Periodical publications of the 20th century described as news-

letters were often an attempt to disseminate at regular intervals personal or specialised interpretations of current events, *e.g.* The *King-Hall News Letter* (later The *News Letter*), The *Week*, and K. de Courcy's monthly memoranda on foreign affairs and strategy, all introduced during the later 1930s. They were posted to subscribers and carried no advertising. See *Journalism*; *Newspaper*.

**News of the World.** London Sunday newspaper, founded Sept. 29, 1843, by John Browne Bell. In 1890 it was acquired by Lascelles Carr and George Riddell, afterwards Lord Riddell. Its circulation of over 8,000,000 (1950) is the world's largest for newspapers.

**New South Wales.** Oldest state of the Australian Commonwealth. It lies on the E. coast, between Queensland and Victoria. In 1788, when British authority was first exercised, the name was applied to the whole of the continent E. of meridian 135° E.

Physically the dominant feature is the main watershed, or divide, which follows roughly the trend of the coast 80 m. W. of it in the N. and 40 m. W. in the S.; this



New South Wales. Map of the oldest state of the Australian Commonwealth



divide, known by various names, Snowy Range, Blue Mts., New England Range, etc., separates the



New South Wales  
arms

short rivers which flow to the E. coast from those which belong to the system of the Murray-Darling. The divide crosses the great plateau, a plain once eroded

almost to base level and since uplifted and dissected, so that the peaks are residual mountains.

The process of erosion is, moreover, continuous, and the coastal rivers are still cutting down into the plateau and forcing the watershed W., so that it is now W. of the highest peaks. E. of the divide the coastal area is a plateau carved by the rivers into valleys, gorges, and scarps which present, from the coast, a complicated highland mass. W. of the divide the plateau descends more gently to the great plains across which the rivers, sometimes in heavy flood, sometimes a mere trickle, or a string of disconnected pools, ultimately reach the Murray. These plains are almost level.

The main rivers of the E. are the Shoalhaven, Hunter, Manning, and Clarence, in all of which either the main stream or tributaries flow roughly parallel to the coast to a lower course which flows directly coastwards, the whole making a T-shaped or L-shaped plan. On the W. the Murrumbidgee, Lachlan, and Darling make wide sweeps across the plains. The lakes are mountain tarns, as Blue Lake near Kosciusko, isolated basins like Lake George N.E. of Canberra, valley lakes, similar to Lake Bathurst, where a side valley has been dammed with alluvium, river-fed hollows like Lake Menindee, which acts as a regulator for the Darling, or coastal lagoons.

The climate is controlled by the steady procession from W. to E. of a succession of high pressure areas. Between them frequently blows the southerly "buster," a cyclonic wind, which causes a fall of temperature and is usually accompanied by rain and often attains a speed of 50 m.p.h. Rains are distributed uniformly throughout the year, but in the N.E. the summer, and in the S.W. the winter, is the rainy season. Kangaroos, wombats, phalangers, lyre birds, emus, and lorikeets are characteristic animals.

The plains are grass lands, interspersed with mallee or mulga and brigalow scrub; the plateau, especially on the E., is forested with wattles (acacias), eucalyptus, or gum trees, which grow after being cut and are ready for cutting again after a few years, making an almost inexhaustible store of timber.

The aridity of the plains, coupled with the ever present possibility of a season of drought, has led to the adoption of every possible means of saving water.

The minerals occur in definite areas, in the N.E. tin, at Inverell; in the far W. silver lead, at Broken Hill, and opals, at White Cliffs; in the centre of the plateau, coal, at Newcastle and Bulli; in the centre copper, at Cobar; and in the centre and S.E. gold, at Araluen, Cobar, and Bathurst. The wet E. is devoted to lumbering and dairy farming; profitable wheat farming is limited by the rainfall to the area where the fall lies between 20 and 30 ins.; the arid W. is devoted to sheep. Sugarcane and tropical fruits near the N.E. coast, vines in the Hunter Valley and near the middle course of the Murray river, at Albury,

are specialised products. Pop. 2,912,791, of whom about one-half live in Sydney, the state capital. The federal territory of Canberra (*q.v.*) lies within New South Wales. Area, 309,432 sq. m.

Government is dual. New South Wales is controlled, in part, by the Commonwealth parliament, and in part by the local parliament of two houses—the legislative council and the legislative assembly of 90 members. Executive authority is vested in a governor, assisted by a lieutenant-governor, and a cabinet of responsible ministers. Botany Bay was discovered in 1770 by Capt. Cook, the state then becoming a British possession; the first convict fleet arrived in 1788, when the first settlement was established at Port Jackson; transportation ceased in 1850. A partially elective legislative council was established in 1842, and responsible government in 1856. *See Australia.*

**New South Wales, BANK OF.** Institution founded in 1817. It has 778 branches and operates throughout Australia, New Zealand, and the Pacific islands. Its head office is at Sydney, and its London office at 29, Threadneedle Street, E.C.2.

## THE NEWSPAPER AND ITS INFLUENCE

Viscount Camrose, Editor-in-Chief, *The Daily Telegraph*

*Details of the world's leading newspapers are given under their appropriate headings throughout this Encyclopedia. See also under Journalism; and the biographies of many notable journalists and newspaper men of the present and past, e.g. Camrose; Kemsley; Northcliffe; Rothermere; Scott, C. P.; Stead, W. T.; and (in the U.S.A.) Greeley, H.; Hearst, W. R.; McCormick, R. R., etc.*

In Dr. Johnson's Dictionary newspapers are defined as "papers which give an account of the transactions of the present times." Transactions may be taken to include public affairs at home and abroad; contemporary literature, music, painting, and drama; commerce, including advertisements, and any other activities, intellectual, cultural, political, financial or commercial, which affect the lives of, and therefore interest, men and women belonging to a particular society. Though there have been enormous changes in the form and availability of newspapers, their essential purpose has remained constant. In one of the earliest newspapers, whose first issue appeared on May 29, 1695, the proprietor and editor, John Whitlock, announced that his newspaper would aim at presenting "an impartial survey of events of public use and advantage, not only to the curious and speculative, but also to the trading part of mankind." His object, he said, was to pre-

sent news only, "supposing other people to have sense enough to make reflections for themselves." Most editors today would be ready to endorse Whitlock's conception of the function of a newspaper.

**EARLY JOURNALISTS.** Johnson himself was one of the first great English journalists. Apart from his well-known contributions to *The Idler* and *The Rambler*, for some time he wrote reports on parliamentary debates for the bookseller Cave. He was unable, like parliamentary reporters today, to sit in the press gallery. Cave arranged for him to receive reports on "the subject of discussion, the names of speakers, the side they took and the order in which they rose, together with notes of the arguments advanced and the course of the debate." From this material Johnson "composed the speeches," which usually flattered those who had delivered them by being more eloquent and sagacious than the originals. Johnson, however, "disapproved

the deceit he was expected to practise, and was not easy till he had disclosed the deception."

Other distinguished pioneers were Addison, who founded *The Spectator*; Steele, who founded *The Tatler*; and Swift, who for some years contributed regularly to *The Examiner*. Swift's contributions, as was to be expected, were highly opinionated, and originated what came to be called the leading article or editorial.

Perhaps the most notable of all early journalists was Daniel Defoe, who founded *The Review* at the beginning of the 18th century. This talented and versatile man, if he was less of a moralist than Johnson and Addison, less of an essayist than Steele, and vastly less settled in his opinions than Swift, was a first-rate reporter, and, as it would now be called, columnist. He was even able to provide an eye-witness account of the great plague of 1664-65 (*Journal of the Plague Year*) which was accepted as authentic until it was noticed that Defoe was only a young child at the time the catastrophe occurred.

Wilkes in his North Britain fought for the right to publish parliamentary proceedings, and undeniably played a large part in freeing newspapers from governmental restrictions. The influence of William Cobbett's robust, highly individual journalism reached far beyond the normal newspaper readers of his time. Junius, now believed to have been Philip Francis, in his Letters exerted a great influence on public affairs. Leigh Hunt's vigorous conduct of *The Examiner* earned him some months of imprisonment, which, however, he spent in considerable ease with full facilities for writing.

These were the first great names in a profession which has continued to attract men of outstanding ability—Delane of *The Times*, Le Sage and Edwin Arnold of the *Daily Telegraph*, C. P. Scott of the *Manchester Guardian*, and J. L. Garvin of the *Observer*, to mention only a very few.

**FREEDOM OF NEWSPAPERS.** Though the newspaper, as known today, is a comparatively recent development, its equivalent has existed since the beginning of time. There are no human beings so primitive that they are not curious about their own and their neighbours' affairs, and who do not find some means of satisfying that curiosity. Before the printing press there were written newsletters; before the telegraph there

were postboys and couriers; before writing as a means of communication existed there was word of mouth. Through the most remote jungle and across the widest deserts there somehow passes, and always has passed, news of what is happening far and near.

The appetite for news is so widespread and so rapacious that it has inevitably engaged the attention of governments. In England the freedom of newspapers from government interference has been achieved only with difficulty, and, incidentally, can be maintained only with vigilance. In 1632 the Star Chamber issued an edict forbidding the printing of foreign news. When nine years later the Star Chamber was abolished, the free press revived, but was again suppressed in 1649 by Cromwell, who, like the totalitarian rulers of today, allowed the publication of official journals only. One of them, ironically enough, in view of the position he took in *Areopagitica*, was edited by Milton. An official journal, the *London Gazette*, which first appeared on February 5, 1666, has been published twice a week ever since.

#### The Stamp Tax

With the Restoration the situation was easier, and after the Revolution of 1688 all press censorship came to an end, with the result that newspapers and periodicals greatly increased in popularity. Their growing influence alarmed the government, and an attempt was made to curtail their circulation by means of a stamp tax. Though the stamp tax was subsequently increased from 1d. to 4d., and an additional tax on advertisements was imposed, newspapers still multiplied (there were 53 in London alone in 1776) and increased their circulations. The tax was finally abolished in 1855. In June of that year the *Daily Telegraph* began publication at 2d., and then after ten weeks was reduced to 1d. Hitherto the position of *The Times*, whose price had been reduced successively between the years 1836 and 1861 from 5d. to 3d., had been unchallenged.

Apart from extraordinary measures taken in wartime, there was no attempt seriously to interfere with the conduct of newspapers until 1947, when, as a result of pressure from its own supporters in parliament, a Socialist government set up a royal commission "to inquire into the control,

management, and ownership of the newspaper and periodical press and news agencies." A parliamentary debate which preceded the setting up of this royal commission indicated that a desire existed, not merely to inquire into the ownership of newspapers (which in any case was known already) but to find means of curtailing their freedom to criticise government policy. Like the Star Chamber, which first instituted control of the press, the commission adopted the unusual procedure of hearing all evidence in camera. The practice was, however, changed after a short time and the evidence was published. This was fortunate in view of some of the unsubstantiated and reckless statements made in evidence by a few of the witnesses in their desire to produce a strong case against the press.

**THE MODERN NEWSPAPER.** The founding of the *Daily Telegraph* demonstrated the practicability of a national newspaper at 1d. By the eighties it could claim "the largest circulation in the world." In 1896 Alfred Harmsworth, afterwards Lord Northcliffe, founded the *Daily Mail* at 4d., and its circulation soon shot up to near the million mark. Its treatment and presentation of news, as well as its editorial comment, were less ponderous than had hitherto been the case. If this led to the charge that the serious purpose of a newspaper was being sacrificed to entertainment (curiously enough, the same charge was made in the early 17th century when newsletters gave place to newspapers), the *Daily Mail* continued to prosper and to provide a model which other popular newspapers attempted to follow. The *Daily Express*, founded in 1900 by Arthur Pearson and personally controlled by Lord Beaverbrook after the First Great War, and the *Daily Mirror*, founded by Lord Northcliffe in 1903, succeeded. The *News Chronicle*, which began as the *Daily News*, under the editorship for a brief while of Charles Dickens in 1845, and the *Daily Herald*, which was founded in 1912 and was taken over officially by the Labour party in 1923, became in time large circulation newspapers. The provincial press underwent fewer changes than the national, but continued to exert proportionately greater influence.

More even than the national dailies, the Sunday newspapers built up vast circulations. The

News of the World, for instance, founded in 1843, attained a circulation of over one million in 1906, and forty years later had run its circulation up to the staggering total of 7½ millions. The People, the Sunday Pictorial, the Sunday Express, the Sunday Empire News, and the Sunday Dispatch also came to have circulations running into millions.

This vast extension of newspaper circulations which took place in the first three decades of the 20th century was made possible by inventions like the rotary press and the linotype machine, which enabled large numbers of newspapers to be printed quickly; and by a new process for making paper which greatly reduced its cost. At the same time, the operation of the Education Act of 1870 led to a great increase of literacy, and therefore in the potential newspaper-reading public. A demand for popular newspapers existed, and the means of satisfying this demand were made available. In the days of the Napoleonic wars a circulation of 4,000, such as that of the Morning Post, was considered to be large, but newspapers in later years have come to reckon their circulations in hundreds of thousands and then in millions.

#### The News Agencies

Another important factor in the development of the popular press has been the news agency. Though national newspapers pride themselves on having their own exclusive home and foreign news services, they must also to a greater or smaller extent rely upon agencies like Reuters, founded by Julius Reuter in 1849, for foreign news, and the Press Association for home news. In 1947 the control of Reuters by the Newspaper Proprietors' Association and the Press Association was extended to include representatives of the Australian and New Zealand press.

**AFTER THE SECOND GREAT WAR.** The governing factor in the post-war circumstances of British newspapers was shortage of newsprint. During the war itself rationing of available supplies was organised by the Newspaper Supply Company, consisting of representatives of national and provincial newspapers, acting under the Paper Control. This arrangement prevented the normal play of competition between newspapers, and artificially stabilised their relative positions. Of

the 13 London morning newspapers, two—The Times and the Daily Telegraph—sacrificed circulation to maintain, in the case of the Daily Telegraph, six, and of The Times, ten pages. At the same time The Times increased its price from 2d. to 3d., and the Daily Telegraph from 1d. to 1½d. The other national newspapers maintained their price at 1d., but reduced their size to four pages.

#### Post-War Paper Shortage

After the war the shortage of newsprint continued. Indeed, in consequence particularly of dollar difficulties in Canada, it tended to get worse. In 1947 the government, in order to make an economy of £2,000,000 in its dollar expenditure, further reduced purchases of newsprint, thereby preventing the maintenance of a temporary increase in size instituted in the post-war period. Newspapers were forced to revert to their wartime size. If, in the artificial conditions imposed by war this did not prevent them from adequately fulfilling their proper function, in the conditions of peace they were seriously handicapped. For instance, the proper reporting of parliamentary debates, so necessary in a democracy, was impossible.

Certified statements of circulation indicate that in July, 1947, the Daily Express was leading all national dailies, with the Daily Mirror as a close runner-up, the Daily Herald and the Daily Mail running neck and neck for the third place. In the case of the two "quality" newspapers, the Daily Telegraph had a circulation of approximately a million, and The Times about 270,000.

The shortage of newsprint effectively prevented any new newspaper enterprise. With the amalgamation of the Financial Times and the Financial News national dailies were reduced from 13 to 12. There continued to be nine Sunday and three evening newspapers. The provincial press consisted of 35 morning and 74 evening newspapers, compared with 45 and 88 respectively in 1921.

In France and most of the countries of western Europe newspapers were even more restricted than in England, and in eastern Europe, as Russian influence spread, they sank into a position of mere organs of official propaganda and vituperation. In the United States, on the other hand, supplies of newsprint were sufficient for newspapers to maintain, and sometimes to increase, their

pre-war size, and to permit of the production of massive Sunday supplements.

**INFLUENCE OF NEWSPAPERS.** If public education multiplied the numbers of those who could read newspapers, the extension of the franchise multiplied those who needed to read them. The Reform Act of 1832 coincided with a drive finally to abolish the stamp duties on newspapers, or "tax on knowledge," as they were called. By the time universal adult suffrage was an accomplished fact, a national and provincial press catering for the newly enfranchised was already in existence.

The development of truly representative government, indeed, is invariably accompanied by, and requires, a corresponding development of newspapers free to criticise, approve, and generally comment on, its operation. Wherever, as in the U.K. and the U.S.A., representative institutions authentically function, there are free newspapers. Wherever, as in Nazi Germany, Fascist Italy, and Soviet Russia, there is a dictatorship, newspapers are controlled by the state and used by it to deceive and subjugate their readers. The first step a dictatorship takes is to establish control of newspapers; the first indication that a dictatorship has ended is that newspapers are relieved of government control and interference.

#### Influence and Circulation

Various attempts have been made by means of public opinion polls and other activities to estimate the influence of newspapers. The result of these researches has not been decisive or convincing. It is certain that the influence exerted by newspapers is not strictly proportionate to their circulation. No one would suggest, for instance, that the influence of the Daily Telegraph is one-eighth of that of the News of the World because such is the relation between their circulations. On the other hand, newspapers reaching a wide public do undoubtedly influence their readers. There are those who contend that this influence is less than might be supposed. They point out that although the greater number of U.S. newspapers opposed President F. D. Roosevelt, he was four times triumphantly elected. None the less, it remains the case that dictatorial regimes cannot tolerate free newspapers. They, at least, believe in the influence of newspapers, as is demonstrated by the lengths to

which they go to prevent it operating except on their behalf. Consult British Newspapers and their Controllers, Viscount Camrose, 1947; The Newspaper, S. Rothenberg, 1947; Report of the Royal Comm. on the Press, 1949.

**Newspaper Press Fund.** This assists necessitous members of the editorial staffs of newspapers who have become its members, and their widows and orphans. Founded in 1864 and incorporated in 1890, it is administered by a council of 18 working journalists, assisted by district committees in all parts of the U.K. Up to 1947 the sum of £690,382 had been distributed in grants and pensions. A small porportion of the income from donations is distributed to non-members. The names of recipients are not published. The offices are at Bouverie House, Fleet St., London, E.C.4.

**Newsprint.** Paper upon which newspapers are printed. Since the middle of the 19th century the bulk of newsprint has been manufactured from wood pulp, although some is made from straw and esparto grass. Great Britain annually uses some 850,000 tons in normal times, most of it imported from Canada and Newfoundland. But during the Second Great War imports of both newsprint and pulp were drastically curtailed. At the outbreak of war, most publishers voluntarily restricted the size of papers, because of the drop in advertising revenue, and rationing of newsprint began on March 3, 1940, from which date all imports of paper were prohibited except under licence. Supplies of paper from mills to consumers were limited to 60 p.c. (later 30 p.c.) of the amount used before the war. On Sept. 22, 1946, restrictions were lifted to the extent that newspapers and periodicals might print as many copies as they required to meet demand. From 1947 to 1949 continuing heavy adverse balance of trade with dollar countries caused the British govt. to reimpose a cut in the use of newsprint and a restriction of circulation. See Newspaper; Paper; Ration.

**New Statesman and Nation.** THE. Political weekly journal. It was established under its present title in 1931 by the amalgamation of the New Statesman, founded in 1913, and the Nation, founded in 1907. In 1921 the Nation had absorbed the Athenaeum, founded in 1828, and in 1934 the Week-End Review was taken over. Though socialist in outlook, the New Statesman and Nation was a fre-

quent critic of the official foreign policy of the government elected in 1945. Editorial offices are at 10, Great Turnstile, London, W.C.1.

**Newstead Abbey.** Residence in Nottinghamshire, England, formerly the seat of Lord Byron. It is 8 m. N. of Nottingham. An Augustinian priory was founded here in 1170, and at the dissolution of the monasteries the lands passed to the family of Byron. It was made into a residence, and was the seat of the poet until 1818, when it was sold to Col. Wildman, who improved the house a good deal. Of the original abbey the cloister square, with the refectory and chapter house, and the W. front of the church remain. In 1931 Sir Julian Cahn presented the abbey to the city of Nottingham. The Leen rises within the park. The village of Newstead is a coal mining centre with a railway station. See Byron; Hucknall Torkard.

**Newt or EFT (*Triturus*).** Genus of small, tailed Amphibia, of which Great Britain possesses three species, the common or smooth newt, crested newt, and palmate newt. The common newt is found in most clear ponds, is slightly over three ins. long, has a smooth skin, and is brown with darker marks on the upper parts, and spotted with black on the yellowish underparts. The male has a high frill, extending from the top of the head to the end of the tail. It is much more common than the crested newt, which is nearly twice its size. This species has a warty skin, is dark brown on the back with black spots, has irregular white spots on the sides, and has orange underparts with black spots or patches. It is readily recognized by the fine serrated crest of the male. The palmate newt seldom exceeds three ins. in length. The hind toes in the male are webbed, and it is olive brown on the upper parts, with black spots: the crests are nearly black, and there is an orange band in the middle of the under side.

Newts spend a great part of their time on land, where they lurk

among grass and moss under stones and in holes, usually hibernating in such situations. But at the breeding season in spring they are always found in the water, the eggs being deposited singly on the leaves of water plants, the edges of which are folded over them. The egg hatches out as a tadpole, and the course of its development is similar to that of the frog. At first it has external gills and no legs; but in about three weeks the fore limbs are developed, and by the autumn the metamorphosis is complete. The newt has now four limbs, the external gills have disappeared, and it breathes air by means of lungs.

Newts are carnivorous, feeding upon tadpoles, worms, and insects. The common newt is the only species found in Ireland.

**New Testament.** Name given to the collection of books in the Bible which contain accounts of the life and teaching of Jesus Christ, the beginnings of Christianity, and the faith of the early

Church. These books were written to meet the needs of the Christians of the first century, and it was a considerable time before they were added to the canon of Scripture.

During the lifetime of the apostles and contemporaries of Christ, little importance was attached to the books in comparison with the testimony of the actual witnesses of the events. Even as late as 135, Papias of Hierapolis says, "I did not think that I could get so much profit from the contents of

books as from the utterance of a living and abiding voice." It was not until about 150 that the term "scripture" was applied to any of the writings of the N.T.; after that date the advance was rapid. Marcion the Gnostic was the first to construct a canon of the N.T. consisting of the gospel of Luke (in an expurgated form) and ten epistles of S. Paul. Tatian's *Diatessaron* or Harmony of the Four Gospels dates from 165.

The Muratorian fragment of 170 is the first attempt on the part of Catholic Christianity to construct



Newt. 1. Male of common or smooth newt. 2. Underside of male British palmate newt. 3. Female and, 4, male of the large crested newt

a New Testament. It mentions—either by actual statement or inference—all the books of the N.T. with the exception of James, Hebrews, and 2 Peter. By 200 the majority of the documents in the N.T. had secured universal recognition in the whole of Christendom. The Western Church, however, rejected James and Hebrews, and the Eastern Church 2 and 3 John and Jude, while 2 Peter had not as yet won recognition at all. Some doubt, too, was expressed about the Apocalypse. Certain sections of the Church wanted to include in the N.T. such books as the Epistle of Clement, the Didache, the Shepherd of Hermas, etc.

Controversy with regard to the disputed books continued, and it was not until the 4th century that the matter was finally settled. Athanasius was the first great writer to use a N.T. identical with the present, and it was largely due to the influence of Augustine that this arrangement received the authoritative sanction of the Church at the synods of Hippo, 393, and Carthage, 397. *See Bible; Gospels, The Four; Paul.*

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**New Theatre.** London playhouse in St. Martin's Lane, W.C.2. Built and managed by Charles Wyndham, it was opened March 12, 1903, with a production of Louis Parker's Rosemary. It became one of the most popular West end theatres for drama and comedy, showing e.g. Henry of Navarre; Grumpy; The Wandering Jew; The Constant Nymph; Richard of Bordeaux. For several seasons it was the headquarters of the Old Vic company, which opened on Aug. 31, 1944, with a repertory including Shakespeare, Ibsen, and Shaw. The theatre seats 938.

**Newton.** District of Hyde, Cheshire. It is 7 m. S.E. of Manchester, with a rly. station. Cotton is the chief manufacture. Pop. 10,986. Another Newton in Cheshire is part of the urban dist. of Middlewich, and there are in England a number of villages of this name. One is near Wisbech, Cambridgeshire, and another, in the Isle of Wight, was long noted for its oysters.

**Newton.** City of Massachusetts, U.S.A., in Middlesex co. Situated on elevated ground on Charles river, close to Boston, it is formed of 14 villages, each with its own civic centre and rly. station. Manufactures include worsteds, silk, machine-shop products, cord, and rubber articles. Newton was settled in 1631, and incorporated under the name of Cambridge in 1688. It received its present name in 1692, becoming a city in 1873. Emerson and Hawthorne were notable residents. Pop. 69,873.

**Newton, ALFRED** (1829–1907). British zoologist. Born at Geneva,

June 11, 1829, the son of William Newton, M.P., he was educated privately and at Magdalene College, Cambridge. Having gained a travelling fellowship, he was able to study birds in many parts of the world. Returning to England, he was, in 1866, made professor of zoology and anatomy at Cambridge, where he remained until his death, June 8, 1907. Newton's Dictionary of Birds, 1893–96, is the standard work of its kind. He also wrote The Zoology of Ancient Europe, 1862; Zoology, 1872, 2nd ed. 1894; and was a frequent contributor to scientific journals.

## SIR ISAAC NEWTON

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*See the articles Energy; Gravitation; Light; Mechanics; Physics. Refer also to Relativity; Einstein; Kepler; and the biographies of other eminent physicists*

Isaac Newton was born at Woolsthorpe, Lincolnshire, Dec. 25, 1642, and educated at Grantham School. In 1661 he entered Trinity College, Cambridge, where he resided a year or more before he began to read mathematics. He proved an apt student, and by the early part of 1665 had made himself familiar with Euclidean geometry, geometrical conics, algebra, trigonometry, analytical geometry, and analysis as then studied; he also worked for his own amusement at optics and chemistry. In 1665 there was an outbreak of plague, and for a

Newton returned to Cambridge in 1668, having been elected to a college fellowship the previous year. For the next 30 years he lived in college, engrossed in the researches on which his fame rests. Soon after his return to Cambridge he was elected Lucasian professor, and as such lectured once a week in one term of each year, supplementing his instruction by personal interviews and the loan of manuscripts. The value of his work was widely recognized, and in 1675 the Crown issued letters-patent, permitting him to hold his fellowship without the necessity of taking orders. A short man with a broad forehead, a determined square jaw, bright blue eyes, and sharp features with a prominent nose, in character he was modest, deeply religious, and scrupulously just, but easily upset by controversy. A Whig, he disapproved of many happenings in James II's reign. His protest against James's attempt to force the university to award a master's degree to a Benedictine monk brought him before Judge Jeffreys. He was elected to the Convention parliament of 1689.

Newton left Cambridge in 1696, and during the rest of his career lived in London, holding offices in the Mint. These offices gave him a sufficient income; he enjoyed a well-appointed home, knew everyone he desired, and was universally honoured and esteemed. His reports on official matters show him as an acute and well-informed observer, but in science he produced nothing more of special note.

It was during this period that he became involved in two controversies, one on the question



After  
J. Vanderbank

*Isaac Newton*

couple of years he lived at home, though with occasional visits to Cambridge. Probably at this time his creative powers were at their highest. He had already discovered the binomial theorem, his use of fluxions may be traced back to 1665, his theory of gravitation originated in 1666, and the beginning of his optical discoveries would seem to have been made early in 1667.



whether Leibniz had discovered the infinitesimal calculus independently or had appropriated the idea from him, the other about the publication of Flamsteed's observations. He died at Kensington, March 20, 1727, and was buried in Westminster Abbey. He had been knighted in 1705, and was president of the Royal Society from 1703 until his death.

As regards his researches in pure mathematics, Newton dealt with most of the subjects then read, notably geometry and algebra. The evolution of the calculus was one of the great intellectual achievements of his day; this was invented by him, possibly also independently by others, though its introduction into general use was mainly due to Continental mathematicians. In geometrical optics, Newton developed the mathematical exposition, and for the first time offered an explanation of colour phenomena; he also invented a reflecting telescope, microscope, and sextant. These investigations led him to consider how light was produced, that is, to a theory of physical optics. In this he discussed the wave and corpuscular theories, rejecting the former, which, as then presented, failed to account for the rectilinear propagation of light, but admitting the latter as possible though not altogether satisfactory.

Newton's work on mechanics and gravitation is even more important, for it profoundly affected the ideas of men about the universe. He began with a discussion on the principles of mechanics, and proceeded to treat the motion of bodies in free space in known orbits or under the action of known forces, generalising the law of attraction into the statement that every particle of matter attracts every other particle with a force varying directly as the product of their masses and inversely as the square of the distance between them. Thus gravitation was brought into the domain of science, but what caused it Newton did not profess to know; and here, as in his theory of light, it was his object to present the theory free from speculation as to the mechanism that produced the phenomena.

Having investigated the general theory, Newton applied the results to the chief phenomena of the solar system, and showed that the facts then known about it and, in particular, the path of the moon with its various inequalities, the figure of the earth, and the motion of tides, accorded with the theory

Newton's work has stood the test of modern theory and practice, for even Einstein's work on relativity has shown that the mechanics developed by Newton are merely a particular case of a much more general formulation of the laws of motion and gravity. Again, Newton anticipated wave-mechanical theory to a certain extent, for he associated particles with the formation of sharp optical shadows, while to explain the colours of their films he assumed light to possess some periodicity.

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**Newton, JOHN** (1725-1807). English divine. Born in London, July 24, 1725, he had a varied career at sea, and was ordained in 1764.



John Newton,  
English divine  
After J. Russell, R.A.

He became in 1780 rector of S. Mary Woolnoth, London. He was a friend of Cowper, who contributed to his Olney Hymns, 1779. He helped Wilberforce in the campaign against the slave trade. Of his hymns, Glorious things of Thee are spoken, and How sweet the name of Jesus sounds, are among the most widely known. He died Dec. 21, 1807.

#### Newton

##### Abbot.

Urban dist. and market town of Devonshire, England. It is 16 m. from Exeter, and has a rly. junction. The town stands amid beautiful scenery at the head of navigation of the Teign estuary. The chief buildings are the churches of S. Mary, Woolborough, and All Saints,

Highweek, both Perpendicular. The industries include clay mining and leather dressing; there are railway workshops. Forde House, a Jacobean building, was visited by both Charles I and William of Orange. In the centre of the town is the tower of S. Leonard's church, near which William of Orange's first declaration to the English people was read, 1688. Newton Abbot comprises what, in the Middle Ages, were two distinct places: Newton Abbot, the property of the abbot of Tor, and Newton Bushel, the property of the family of Bushel. Market day, Wed. Pop. 15,000.

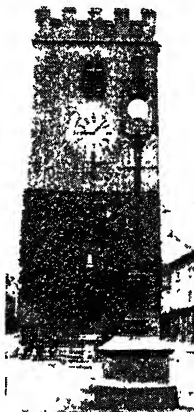
**Newton Heath.** Suburb of Manchester, England. It lies to the N.E. of the city and is served by railway and public road transport. See Manchester.

**Newton-le-Willows.** Urban dist. of Lancashire, England, formerly known as Newton-in-Makerfield. Approximately midway between Liverpool and Manchester, it is a rly. junction. Factories in the dist. include rly. vehicle and locomotive works, a sugar refinery, and printing works. The dist. is in the Newton parl. div. Pop. 21,140.

**Newton's Rings.** Term referring to an optical interference phenomenon, described by Newton in 1675. The rings are analogous to colours seen in films of oil on wet pavements, in soap bubbles, etc. When a spherical and slightly convex lens is pressed into contact with a plane glass surface, a series of coloured rings are seen by reflected white light surrounding the point of contact. The effect is caused by interference between light reflected at the upper end and that reflected at the lower surface of the air films which separate the lens and plate.

**Newton Stewart.** Police burgh and market town in the heart of Galloway, Scotland. It is mainly in Wigtownshire, with one suburb in Kirkcudbrightshire. It is on the river Cree, 30 m. W. of Castle Douglas by rly. Pop. 1,914.

**Newtown** (Welsh, *Trefnewydd*). Urban district and market town of Montgomeryshire, Wales. It stands on the Severn, 7 m. W.S.W. of Montgomery, on the rly. and the Montgomeryshire canal. It was the principal seat of the Welsh flannel industry, making tweeds and shawls, but is now mainly a marketing and residential place. S. Mary's church, with its tower built in the 13th century, stands by the river. The council controls the water supply. Market days, Tues. and Sat. Pop. 5,152.



Newton Abbot. S. Leonard's church tower. A lamp-post surmounts the pedestal from which William III was proclaimed king in 1688

**Newtown.** Suburb of Sydney, N.S.W., Australia. A major manufacturing and industrial centre, it contains also the university buildings and colleges. Pop. est. 26,000.

**Newtownards.** Market town of co. Down, N. Ireland. It is 1 m. from the head of Strangford Lough



Newtownards arms

and 14 m. E. of Belfast on the Belfast and County Down rly. The chief buildings are the town hall, parish church, a fine cruciform building, and a number of other churches. Of the old church, the nave, tower, and an aisle still stand. Women and girls weave muslin, flax and hemp yarns are produced, and there are hosiery works. Market day, Sat. Pop. 10,545.

**Newtown Stewart.** Market town, co. Tyrone, N. Ireland. It stands on the river Mourne, 24 m. by rly. S. of Londonderry. The town was granted to William Stewart, after whom it was named, by Charles I.; the castle was dismantled, and the town burned down by James II. Here is Baron's Court, residence of the duke of Abercorn. Linen is woven in the town. Market day, Mon.

**New Westminster.** Town of British Columbia. It is 12 m. S.E. of Vancouver, is served by C.P.R., C.N.R., and other rlys., and stands on the Fraser river, here about a mile wide, 15 m. above the mouth, at the head of the delta. Salmon canning and the dressing and shipping of timber are carried on at the largest fresh-water port in the prov. Founded in 1858 by Colonel Moody, the town was, before British Columbia became a prov. of Canada, the capital of the mainland. Pop. 44,359.

**New Year's Day.** First day of the year. The ancient Attic year began with the new moon after June 21, and the Romans opened their year on March 1. The beginning of the Roman year was changed by Julius Caesar to Jan. 1. In England the Anglo-Saxon year started with Dec. 25; this was altered at the Conquest to Jan. 1. In the Middle Ages the Christian year began generally on March 25 until the adoption by R.C. nations of the Gregorian calendar in 1582, by England not until 1752, when Jan. 1 became New Year's Day. Among customs observed on New Year's Eve and Day in England, Scotland, and elsewhere may be mentioned the ringing of the church bells at midnight, and Hog-

manay (q.v.). In Scotland, where Jan. 1 is a bank holiday, and in parts of England "first footing" survives; the first person who enters the house on New Year's Day brings good luck according as, in different localities, he is light or dark haired.

**New York.** State of the U.S.A., usually called the empire state. It includes many adjacent islands, of which Long Island, Staten Island, and Manhattan Island are the chief. The surface is diversified. In the W. and centre, approaching Lakes Erie and Ontario, it consists of a level tract, part of which belongs to the Allegheny plateau. The central portion contains the "finger lakes" (Canandaigua, Seneca, Cayuga, and several others), which occupy narrow depressions formed by the Laurentian glaciers.

The mountainous regions of the E. are separated by the Mohawk, whose valley connects at right angles with those of Lake Champlain, Lake George, and the Hudson. N. of the Mohawk lies the picturesque Adirondack range, which attains in Mt. Marcy an alt. of 5,345 ft., and S., to the W. of the Hudson river, are the Catskill group (highest summit, Slide Mt., 4,205 ft.), and an extension of the Pennsylvanian Mts. The principal rivers are the Hudson, flowing N. to S., its right bank affluent the Mohawk, the St. Lawrence, which forms part of the N. delimitation, the Delaware, Niagara, Oswego, Black, and Genesee. Numerous lakes occur in the Adirondack Mts.,

and the rivers are noted for their picturesque falls. Waterway communication is maintained between Albany on the Hudson and the St. Lawrence and Great Lakes by means of the Champlain Canal to the N. and the New York State Barge Canal to the W.

New York became an independent state on April 20, 1777, and was one of the original 13 states of the U.S.A. It is divided into 62 administrative counties. It is primarily a manufacturing state, and its exceptional means of transport by the lakes, rivers, 525 m. of canals, 7,653 m. of steam and 326 m. of electric rlys. (excluding New York city), 14,136 m. of highway, and over 160 airports, make it the greatest commercial state of the Union. The leading industries are clothing, automobile, flour, tobacco, paper, wood pulp, boot and shoe, and machinery manufactures, printing and publishing, bread making, brewing, and slaughtering and meat packing. Next to manufactures, agriculture is of chief importance, and mining also is a valuable interest. Saline, chalybeate, sulphur, and other springs are found in various parts of the state. Higher education is provided at several universities and a large number of colleges. Two senators and 45 representatives are returned to congress. New York City, Buffalo, Rochester, and Syracuse are the principal cities, and Albany is the capital. The area is 49,204 sq. m. and the population is estimated at 12,632,890.

## NEW YORK: AMERICA'S LARGEST CITY

Marie McGowan, formerly of the New York Herald Tribune

*The physical features, industries, and business activities, social and political developments of New York City, described by a writer who knows it well. See also entries under districts, notable buildings, etc., e.g. Broadway; Bronx; Brooklyn; Ellis Island; Liberty; Manhattan; Rockefeller Centre*

New York is the second largest city in the world in pop. and area, the largest in the U.S.A. and in the western hemisphere, and the world's greatest port. It is the largest manufacturing centre in the U.S.A. and the nation's business, commercial, financial, and cultural capital.



New York City arms

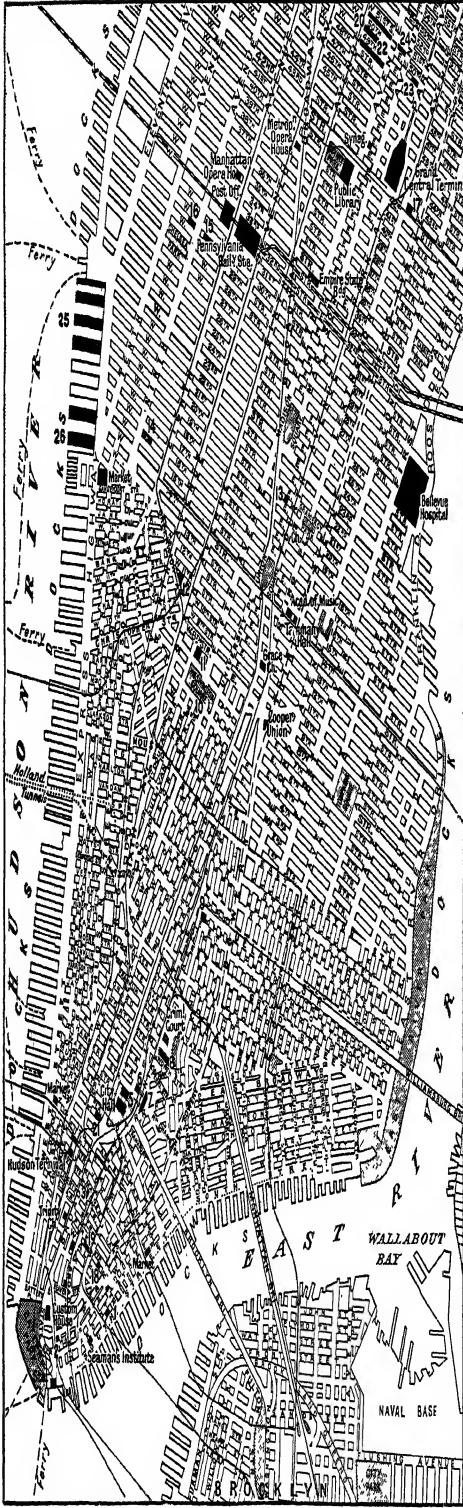
In its financial district, Wall Street, is concentrated control of banks, rlys., utilities, and all manner of industrial and other enterprises in every state of the Union and in every country in the world.

The city is situated on the Atlantic seaboard, in the S.E. corner of the state of New York. The city proper has an area of 322.83 sq. m., with an extreme length, from N. to S., of 36 m. and an extreme breadth of 16½ m. The metropolitan area, i.e. the territory within a radius of 40 m. from the city hall, includes parts of the state of New Jersey to the W., Westchester co. and the state of Connecticut to the N. and N.E., and Long Island to the E. Pop. of the city (1940) 7,454,995; (1948, est.) 7,888,000. Pop. of the metropolitan area (1940) 11,690,520; (1947, est.) 13,580,000.

The city owes its rapid rise to maritime pre-eminence to its mag-







### NEW YORK (CENTRAL)

Scale  
0 1/4 1/2 Mile

Subways — Elevated Rlys. — — —

1. Mile	14. Port Authority Building
2. Army Building	15. French Hospital
3. Chamber of Commerce	16. Chrysler Building
4. Stock Exchange	17. Chrysler Building
5. City Court	18. 40 Wall Tower Building
6. Hall of Records	19. Bank of Manhattan Bldg
7. Municipal Building	20. R.C.A. Building
8. State Building	21. Woolworth Building
9. Police Headquarters	22. Radio City
10. New York University	23. Waldorf-Astoria
11. Whitney Museum	24. St. Patrick's Cathedral
12. St. Vincent's Hospital	25. American Line
13. Roosevelt House	26. Cunard White Star Line



### NEW YORK (GREATER)

Scale  
0 1 2 3 4 5 Miles

Railways — — —

NEW YORK CITY: PLAN OF MANHATTAN FROM BATTERY PARK TO RADIO CITY, AND MAP OF COMPLETE CITY AREA WITH ENVIRONS





nificent harbour and to its location at the mouth of the navigable Hudson river which, by means of its connexion with the New York state barge canal system, provides an outlet to the Atlantic for the wheat, coal, lumber, and heavy industrial products from the Great Lakes area and the Middle West. The harbour is well protected, open throughout the year, deep enough for the largest ships, and vast enough to accommodate the whole U.S. navy without much inconvenience to regular commercial vessels. Broadly considered, it includes all the navigable waterways within a radius of 25 m. from the statue of Liberty on Bedloe's I. in the Upper bay. It consists of 771 m. of direct shore line on navigable water, about 578 m. of which are within the city proper. Narrowly considered, the actual harbour consists of the Lower bay, the Narrows, and the Upper bay, which provide a 17-m. channel from the ocean to the Battery, at the S. end of Manhattan I. Ships of all the world crowd the sea lanes in the world's busiest port. The total tonnage of cargo which passes through the port each year is approx. 120,000,000. During the Second Great War, 60 p.c. of all the cargo shipped from the U.S.A. by water went through the waterways and docks of New York.

#### Communications and Industries

Twelve railway systems terminate in New York, either at the two magnificent terminuses in the city itself, Grand Central terminal and the Pennsylvania station, or at terminuses in New Jersey, across the Hudson.

With the completion of the larger part of the New York international airport, formerly called Idlewild airport, in Queens, New York has become the world's greatest international air-traffic terminus. With the addition of the new airport facilities to those of La Guardia field, also in Queens, the city is able to receive and dispatch a total of 58,000,000 air travellers a year. Newark airport and seaport in New Jersey is another large and important unit in the metropolitan area's termini of the world's airlines.

Virtually every commodity is processed or manufactured in some part of the metropolitan area and every industrial process is carried on. The New York industrial area, by far the country's largest, has more manufacturing industry than Chicago, Philadelphia, Cleveland, and St. Louis together: 75 p.c. of U.S. clothing is made here, virtually

all women's clothing being designed and made in New York.

The area's leading industries, in the order of value of the products, are: manufacture of women's frocks; smelting and refining of non-ferrous metals; manufacture of coats, costumes, and skirts; manufacture of bread and bakery products; meat packing; petroleum refining; manufacture of men's suits and coats; manufacture of motor vehicles, bodies, and parts; publishing of periodicals; and manufacture of fur coats and other garments and accessories.

New York's prestige was enhanced by its acquisition of the status of a kind of world capital, with the setting up there in 1946 of the temporary H.Q. of the United Nations and the selection of a site in the mid-town section of the E. side of Manhattan as the permanent H.Q. into which it was to move in 1951.

#### "The World's Largest"

The city has the world's tallest buildings, having developed the skyscraper, invented in Chicago, in a way that has made it New York's contribution to architecture and the symbol of her aspirations and achievements. It has the world's largest office building (the R.C.A. building in Rockefeller Centre), the largest indoor theatre (the Radio City music hall, which seats 6,200), the largest departmental store (R. H. Macy and Co.), and the world's largest housing project (the Parkchester group of blocks of flats in the borough of the Bronx, constructed by the Metropolitan Life Insurance Co. and accommodating 45,000 people). Broadway, which zigzags the whole length of Manhattan from the Battery to the N. boundary of the city, is 18 m. long.

The city's budget, which reached \$1,000,000,000 (£250,000,000) in 1947-48, is far larger than that of any of the 48 states of the U.S.A. or of any other city. New York surpasses all other cities in the world in the size of its system of free education from six to 21 years of age, the elaborateness of its water-supply, and the number of its telephones, more than all the telephones of France, or Canada, or Sweden, or the U.S.S.R. It has the largest police force in the world, and the largest municipally owned and operated transport system in the U.S.A.

New York is the world's greatest centre of Jewish pop., the Jewish element numbering about 2,000,000. It is the world's negro metropolis, with 500,000 negro residents, some 325,000 of them

crowded into Harlem, on the upper West Side of Manhattan. It has more Italians than any city outside Italy; and it is the world's third Irish city. The polyglot pop. includes representatives of every nationality, race, colour, and creed in the world. The foreign white pop. in 1940, i.e. foreign-born and American-born of foreign or mixed parentage, was 4,831,580. The most important elements of this segment of the pop. in order were Italian, Russian, German, Irish, Polish.

#### Famous Skyline

Comparatively few relics and historic sites have been spared in the city's march to commercial supremacy, and even these go back at the most, only three centuries. The city has, however, a peculiar beauty of the 20th century, and its skyline, seen from a trans-Atlantic liner in the bay, from Queens across the East river at night, from Brooklyn heights, or from the Staten I. ferry, is an unforgettable scene.

Behind this coruscating façade there is much poverty, squalor, and ugliness. From 1933, however (notably during La Guardia's mayoralty 1934-45), the city has enjoyed far-reaching socio-economic as well as political reform and progress. With funds, provided chiefly by the federal govt.'s public-works projects instituted by President F. D. Roosevelt, La Guardia spurred the construction of new bridges, parkways, tunnels, housing projects, hospitals, schools, and playgrounds. Outstanding among these achievements were the several low-cost housing projects in all boroughs except Richmond, providing well-ventilated, well-equipped flats at low rents for former tenement dwellers, and the parkways and drives, especially the W. side Express highway and the Henry Hudson parkway along the Hudson, and the Franklin D. Roosevelt drive, formerly the East River drive, on the other side of Manhattan I., which, besides easing the traffic problem, transformed the waterfronts on the E. and W. boundaries of the island.

The city proper, which was consolidated in its present form on Jan. 1, 1898, consists of five boroughs, Manhattan, the Bronx, Brooklyn, Queens, and Richmond, of which only the Bronx is on the mainland. Brooklyn and Queens, separated from Manhattan I. by the East river, are on the E. end of Long I. The Bronx is N. of Manhattan, across the Harlem

river, and Richmond embraces Staten I., which is S.W. of Manhattan, across the Upper bay. The five boroughs are co-terminous with counties of New York state, Manhattan being New York co., Brooklyn Kings co., the others having the borough names.

To all intents and purposes, Manhattan I. is New York, the other boroughs being in varying degree its suburban residential satellites. There has been an exodus to the comparatively rural outlying areas in recent years, but Manhattan retains the most fashionable residential sectors and its pop. of 1,889,924 (1940) was second only to that of Brooklyn.

Brooklyn (*q.v.*) was an independent city until 1898. The New York navy yard is there.

The Bronx, third in pop. with 1,394,711, is called the "borough of universities." Its institutions of higher learning include divisions of New York university; of Hunter college, the world's largest women's college; and of Fordham university, a Jesuit institution.

Queens, which ranks first in size (126.6 sq. m.) and fourth in pop. (1,297,694), is the site of the two international airports and of the temporary meeting-place of the U.N. general assembly, Flushing Meadow park, where the New York world's fair of 1939-40 was held.

Although it is the third largest borough, Richmond had a pop. (1940) of only 174,441, which includes the city's highest percentage (74 p.c.) of native residents.

Manhattan I. is the heart of this sprawling metropolis. Thousands of suburban residents travel here daily to work from all parts of the metropolitan area. The transport facilities include 20 bridges, the most notable being the old Brooklyn and the new Triborough bridges across the East river and the George Washington bridge across the Hudson, and 18 tunnels, including the Holland and Lincoln tunnels under the Hudson and the Queens-Midtown tunnel under the East river. The Brooklyn-Battery tunnel under the East river, which took 10 years to construct, was opened in 1950. It is 1 m. 279 yds. in length.

The New York transport system also includes tube trains under the Hudson, scheduled ferry crossings and, within the five boroughs, three city-owned underground rlys. or subways, and elevated rly., trolley, and bus lines. A uniform nickel fare (five cents or 2½d.) for any distance travelled was charged by the subway 1904-48, when it

was doubled, the subway having long been run at a loss.

All trolleys and trams have been done away with on Manhattan I., where surface transport is by single-fare buses. The subway is woefully overcrowded; other facilities for travel from E. to W. are also inadequate.

Manhattan's streets are laid out in the gridiron pattern usual in most U.S. cities, with numbered streets running from E. to W., except in the extreme S. end and in Greenwich Village, where the pattern of named streets and occasional numbered ones is erratic. Most of the avenues, which run N. and S. from river to river, are numbered, although a few are lettered and others, such as Park, Lexington, Madison, are named. Fifth avenue divides the island into its E. and W. sides, the street numbers beginning at Fifth avenue. The system of consecutively-numbered streets and avenues makes it easy to find the way in Manhattan.

#### Manhattan from S. to N.

A trip up Broadway from the Battery to the Bronx, with occasional side excursions to the E. or W., gives a glimpse of the immensely concentrated and varied life of Manhattan and of its most famous sights. At the Battery, so-called because the British built a fort there in 1693, is a pleasant park and the abandoned aquarium, a gloomy structure, to be supplanted by a new aquarium at Coney I., Brooklyn. The Whitehall district just N. includes not govt. buildings, but the offices of steamship lines; Bowling Green, where, legend says, Peter Minuit, director-general of New Netherland, purchased Manhattan in 1626 from the Indians for trinkets worth \$24; the U.S. custom house, which houses the offices of the collector of customs of the port of New York and other federal agencies; and Frances tavern, one of the island's hallowed landmarks, where George Washington bade farewell to his officers in 1783. On West street, bordering the Hudson, docks, sheds, and loaded lorries give evidence of the port's ceaseless activity. The city's wholesale food markets are here.

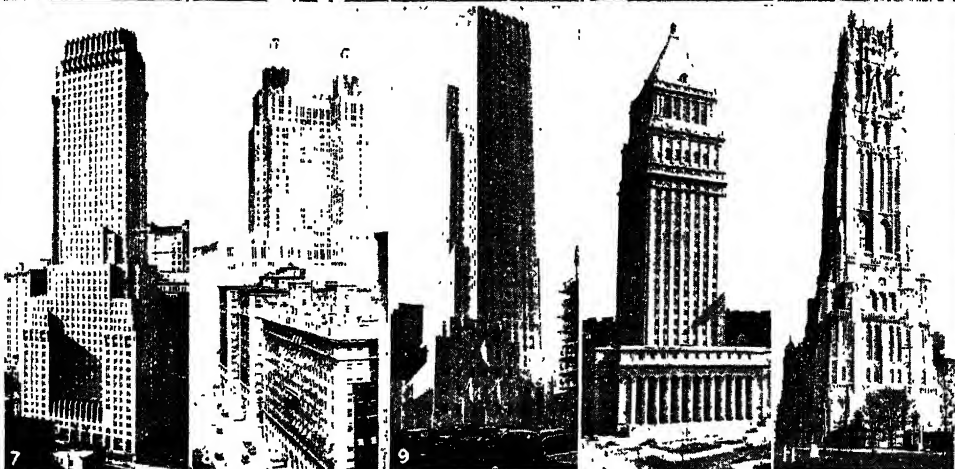
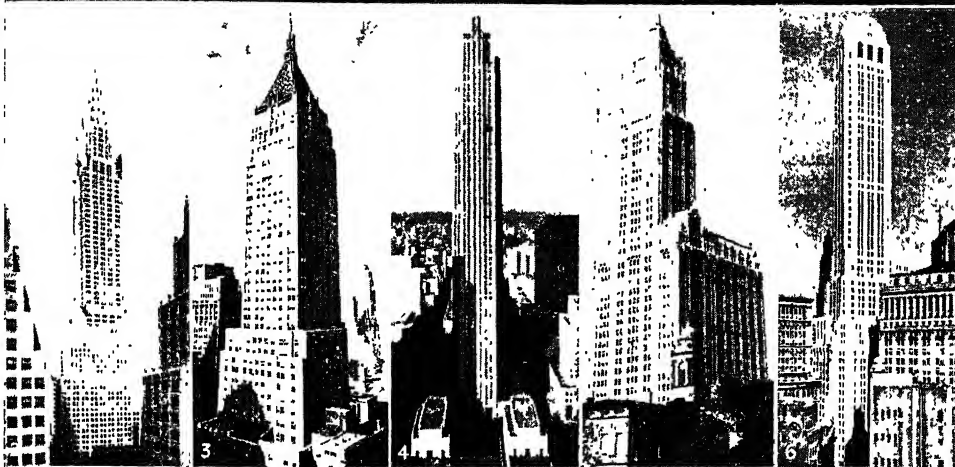
A little farther N. is the Wall street area, which is symbolised by the soaring skyscrapers which make canyons of the narrow streets. Skyscrapers were erected here in the first place to satisfy the demand for office room in this strategic area and to take advantage of the island's rock-ribbed foundation.

The 950-ft., 66-storey, 60 Wall Tower and the 927-ft., 71-storey bank of Manhattan building are the third and fourth highest structures in the city, taller being the 1,248-ft., 102-storey Empire State building at Fifth avenue and 34th street, and the 1,046-ft., 77-storey Chrysler building at Lexington avenue and 42nd street. Other landmarks are the New York stock exchange, the U.S. sub-treasury building, where Washington took the oath as president of the U.S.A. in 1789, and Trinity church, an incongruity amid the vast expanses of steel and stone, which became perhaps the wealthiest Protestant Episcopal church in the world and owner of a substantial parcel of lower Manhattan as a result of a land grant by Queen Anne in 1705.

Farther N. is New York's civic centre, dominated by the city hall, the third in the city's history. An Italian Renaissance structure, set in a small park where the declaration of independence was read to the American army in 1776, it was dedicated as the seat of city govt. in 1812. Overshadowing the city hall is the 40-storey municipal building, site of many municipal offices and of the city's broadcast station; in the area are the U.S. court house, the state supreme court building, the city's new criminal courts building, and prison and police h.q. To the east, behind police h.q., is Chinatown, where 5,000 Chinese live and conduct business, and where their children attend the Chinese school, which is part of the city's system, and where they learn Chinese after regular classes. On the edge of Chinatown is the Bowery, a drab thoroughfare famous for the drink-sodden, down-and-out derelicts who frequent it. Somewhat to the N. and farther E. is the lower E. side, long notorious for the slums in which many of the city's poorest foreign-born residents are concentrated. Housing projects have somewhat improved the area.

Farther N. in the centre of the island is Washington square, one of the city's few squares, where Fifth avenue begins, and Greenwich Village, which clings tenaciously to its reputation as the Bohemian home of unsung artistic and literary genius. In the twenties and thirties, on the W. side, is New York's vast wholesale clothing industry.

The area between 34th and 59th streets, embracing most of the E. and W. sides, is the heart of the heart of New York, a concentra-



1. Skyscrapers of Lower Manhattan, with the British liner Queen Mary passing Battery Point. 2. Chrysler bldg., 1,048 ft. (1929). 3. Manhattan Co. bldg., 927 ft. (1929). 4. R C A bldg., Rockefeller Center, 850 ft. (1933). 5. Woolworth bldg., 792 ft. (1913). 6. City Bank Farmers Trust bldg., 686 ft. (1931). 7. Chann

bldg, 675 ft. (1929). 8. Waldorf-Astoria hotel, 625 ft. (1931). 9. International bldg., Rockefeller Center, 514 ft. (1933). 10. U.S. Court House, 585 ft. (1936). 11. Riverside Church (1930); the tower contains the world's largest carillon. See also Empire State Bldg., for picture of the world's highest building. (1,248 ft.)

#### NEW YORK: ITS FAMOUS SKYLINE AND SOME OF ITS LOFTIEST TOWERS

tion of the best which the city has to offer in the theatre, music, other kinds of entertainment, and the purveying of luxury in all its forms. At 34th street and Fifth avenue are the first of the luxury departmental stores, while to the W. are the Pennsylvania station and the New York post office, both huge structures.

Beginning at 42nd street on the W. side is the Times square district, of which the centre is New York's Piccadilly, where crowds gather on New Year's Eve and election night. The theatres are not on Broadway, but in the side streets just E. and W. of it. At Fifth avenue is the squat structure of the New York public library, in front of which are two seated stone lions. Just E. is the Grand Central district, dominated by the terminus. At the E. end of the island, bordering on the East river, is the site purchased by John D. Rockefeller, Jr., and presented to the U.N. for the world organization's h.q.; it was formerly crowded with tenements, abattoirs, and garages. The upper E. side from the 50s to the 90s, notably Sutton and Beekman places and the mid-section of Park avenue, contains the city's smartest houses and flats.

Facing Fifth avenue, and extending from 48th to 52nd streets and W. to the avenue of the Americas (formerly Sixth avenue) is Rockefeller centre (*q.v.*). Across Fifth avenue is S. Patrick's cathedral, a Gothic Revival structure, seat of the R.C. archdiocese of New York.

Central park, the city's largest, has an area of 840 acres and extends  $2\frac{1}{2}$  m. from 59th street to 110th street, the fringe of Harlem, and  $\frac{1}{2}$  m. from Fifth avenue to Central park W. It contains a zoo, much smaller than the city's principal zoo in the Bronx. Near are the Metropolitan museum of art, containing America's most comprehensive art collection, the American museum of natural history, and the Hayden planetarium.

On the E. end of the island, are the buildings of the Rockefeller institute for medical research, and the striking group of 15 structures of the New York hospital and the Cornell university medical college. At the edge of Yorkville, the German section, is Carl Schurz park.

At E. 96th street begins the three-square-mile expanse of the city's largest and worst slum area, Harlem, where approx. 325,000 negroes, 250,000 Puerto Ricans, Cubans, Mexicans, and other Latin Americans, and 250,000 Italians

live, several families or as many as 20 persons sharing one four-room flat. There are three sections, called negro, Spanish (a misnomer), and Italian Harlem, of which the last, only a square mile in area, is Manhattan's most densely populated section and the country's largest Italian-American colony. Relieving the squalor of negro Harlem are the Harlem river houses, Manhattan's first large-scale low-income housing project, constructed by the federal govt. in 1937, another development financed by John D. Rockefeller, Jr., and the blocks of flats in the Sugar Hill section where negro celebrities—musicians, composers, writers, actors, and prize fighters—live in segregated affluence.

At the W. extremity of Manhattan I., Riverside drive is no longer a fashionable residential section, but it and the 11-m. Henry Hudson parkway along the Hudson form one of the island's most attractive highways. Crowning Morningside Heights and extending along Broadway between 116th and 120th streets are the 69 buildings which form the main portion of Columbia university. Also on Morningside Heights is the cathedral of S. John the Divine, seat of the Protestant Episcopal diocese of New York, begun before 1900 and still unfinished after more than half a century.

The notable smaller islands in the waters around Manhattan include Bedloe's, Ellis, and Governors Is. in the Upper bay and several in the East river. On Bedloe's I. stands one of the first sights seen by passengers arriving in New York, Bartholdi's figure of Liberty Enlightening the World, universally called the statue of Liberty. Ellis I. is the h.q. of one of the nation's 22 immigration and naturalisation districts. Governors I., site of the "pleasure house" of the British colonial governors of New York, is the h.q. of the First army, with jurisdiction over New York, New Jersey, Delaware, and the New England states. On Welfare, Ward's, Riker's, and Randall's Is. in the East river, which is actually not a river but a tidal strait or salt-water estuary, are hospitals, a model penitentiary, a large sewage-disposal plant, and the Triborough stadium, which accommodates 30,000 spectators.

#### History of the City

Manhattan I., where all that New York is most famous for is concentrated in 31.2 sq. m., was discovered by Henry Hudson, exploring on behalf of the Dutch

East India Co., in 1609. The first houses for white men were built two years later, and the settlement, called New Amsterdam, was incorporated as a city in 1653, when its pop. was about 800.

After more than half a century of Dutch rule, the city was captured by the English in 1664 and was included in the grant of all the Dutch land in America which Charles II gave to his brother James, then duke of York. It was in honour of James that the city was then renamed as New York. In 1673, the Dutch recaptured it, but 15 months later, New Netherland, including the city, was ceded to the English. In 1686, the first charter was granted and the first newspaper was founded in 1725. During the revolution, the city was taken by the British in 1776 and the Americans did not regain control of New York below 14th street until 1783. In 1784, Governor George Clinton appointed James Duane as the first mayor of the independent American city.

New York was the capital of the U.S.A. from 1785 to 1790; in the latter year, the pop. was 33,131 and the city limits were the Battery and the S. boundary of City Hall park. It was the capital of the state until 1797.

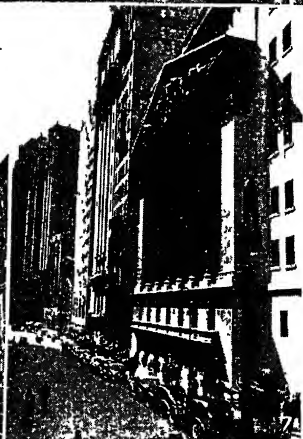
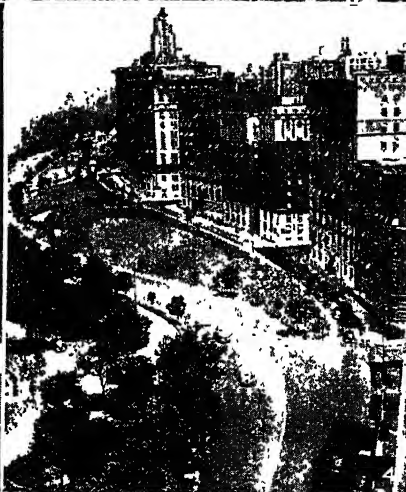
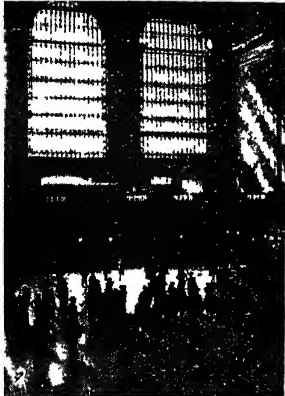
#### Administration of the City

The city govt. is vested in elected officials, headed by the mayor, who is administrator and policy-maker, members of the city council, which is the legislative body, and members of the board of estimate, who include, besides the mayor, the comptroller, the president of the council, and the five borough presidents. Judges of the higher courts are elected, others are appointed by the mayor.

Two of the city's daily newspapers which influence national opinion and reflect American opinion internationally are the New York Times and the New York Herald Tribune (*q.v.*). The latter has a European edition, published in Paris. The New York Daily News, an isolationist "tabloid," has the largest circulation of any U.S. newspaper.

The city's recreational facilities include 20,300 acres of parks, comprising 10 p.c. of the city's area and of its assessed valuation; 65 m. of landscaped parkways which have no intersections and are restricted to pleasure vehicles, and several beautifully-designed and well-kept beaches, notably Jones beach on Long I., with which the famous Coney I., in Brooklyn, does not bear comparison.





1 Air view of the north central part of Manhattan, showing Central Park, the Hudson River, and George Washington bridge 2 Main concourse of the Grand Central rly. terminal 3 Fifth Avenue 4 Riverside

Drive 5. The Wall Street "canyon," with Trinity Church; on right, a statue of Washington stands over the spot where he took oath as president. 6. Cornell University Medical College. 7. Stock Exchange.

**NEW YORK: BUILDINGS AND STREETS IN THE METROPOLIS OF THE U.S.**

**New York Bay.** Inlet on the Atlantic coast of the U.S.A. It comprises the upper and lower bays, connected by a channel called The Narrows. The upper bay lies at the mouth of the Hudson river, and on its shores is the city of New York. It is joined to Newark bay by a channel called Kill Van Kull. The lower and larger bay separates Long and Staten islands from the mainland of New Jersey.

**New Yorker.** THE. Satirical and literary U.S. weekly magazine. First issued in Feb., 1925, it was edited by Harold Ross, who was also chief owner. The laconic style of New Yorker contributors reflected from the first the disillusionment with war which prevailed in the 1920s; the style has been maintained, with frank enjoyment of American prosperity added. The New Yorker style of pictorial joke, characterised by a minimum of written explanation and the concentration of attention on the joke at the expense of visual accuracy, revolutionised comic art on both sides of the Atlantic.

**New York Herald Tribune.** THE. American daily and Sunday morning newspaper which resulted from the merger, in 1924, of the New York Tribune, established by Horace Greeley, April 3, 1841, and the New York Herald, started by James Gordon Bennett, May 6, 1835. Greeley was succeeded as chief proprietor and editor of the Tribune by Whitelaw Reid, who had been a war correspondent during the Civil War and U.S. minister to France and Great Britain. His son, Ogden Reid (1882-1947), effected the merger with the Herald. The Reid family combined the technical progressiveness of the Tribune with the enterprise of the Herald, which secured an exclusive account of Gettysburg in 1863 and sent Stanley in 1869 to find Livingstone. In editorial policy the paper preserves a conservative Republican stand on domestic affairs but is progressive in its international outlook. Thus it opposed President F. D. Roosevelt's New Deal, and advocated all-out aid to Great Britain long before Pearl Harbour. After the liberation of Paris, 1944, it revived its European edition, founded by Bennett in 1887 and known as the Paris Herald. The offices are at 230, West 41st street.

**New York State Barge Canal.** Largest artificial waterway in the U.S.A. From Buffalo on Lake

Erie to Troy on the Hudson river, it is 352 m. in length, to which its Oswego, Cayuga-Seneca, and other tributaries add another 173 m. It is served by 57 locks, and minimum depth is 12 ft. Opened in 1918, supplanting an earlier system, the canal enables cargoes to travel from New York to remote ports on the Great Lakes without transshipment. Modernisation required the abandonment of part of the old Erie Canal, which was the principal unit in the system, and the canalisation of the Oneida, Oswego, Mohawk, and Huron rivers, whose levels were altered and dammed at a cost of £30,000,000. Its great mass of commerce, flowing both inward and outwards, consists largely of petroleum, lumber, wheat, and molasses; lake carriers take coal, iron, motor cars, and grain to ocean ports. Total canal tonnage in 1939 was 4,689,037.

**New York Times.** THE. American Independent Democratic daily and Sunday morning newspaper, established by H. J. Raymond (a former member of the editorial

staff of the New York Tribune), Sept. 18, 1851. Adolph Ochs was owner from 1896 until his death in 1935, whereupon his son-in-law A. H. Sulzberger succeeded. The paper publishes, as part of its Sunday edition, a notable literary supplement and Times Magazine. Its motto is: "All the news that's fit to print." Its offices are at 229, West 43rd street. For its objective reporting the paper stands in esteem above all others in the city except the New York Herald Tribune, and exercises more influence than is suggested by its Sunday sales of one million.

**New York University.** Educational institution of the U.S.A. Its work is carried on partly in old buildings in Washington Sq., partly in newer halls and lecture rooms on University Heights in the Bronx. Founded in 1831 and privately endowed, it is the second largest educational institution in the U.S.A. The teaching staff exceeds 1,800 for over 40,000 students. Its Hall of Fame, with statues of noted Americans, overlooks the city.

## NEW ZEALAND: A BRITISH DOMINION

\* Walter C. Smith, writer on Imperial Affairs

*This Encyclopedia contains articles on Dunedin; Wellington; and other places and physical features of note in the Dominion. See the biographies of Low, David; Mansfield, Katherine; Seddon, and other New Zealanders; also Geyser*

New Zealand (Maori *Ao Tea Roa*, the long white cloud) is a British Dominion in the South



New Zealand arms

Seas. It is approx. 1,200 m. E. of Australia, 6,000 m. W. of S. America, and 1,600 m. N. of the Antarctic continent. It embraces North and South Islands, the small Stewart I. separated from the S. end of South Island by Foveaux Strait, and many small islands in the neighbouring seas, of which the Auckland and Kermadec groups, and the smaller Campbell, Three Kings', Antipodes, and Bounty islands are uninhabited; the Chatham and Cook groups contain over 18,000 people. New Zealand also holds the mandate for the former German colony of Western Samoa. The area of New Zealand, with adjacent and outlying islands, is 103,935 sq. m. The area of the N. Island, with adjacent islets, is 44,281 sq. m., and of the S. Island, with adjacent islets, 58,093 sq. m.

The pop. of N.Z. at the 1945 census was 1,702,298, 1,603,554 whites and 98,744 Maoris. The pop. of the four largest towns (1947) was Auckland, 281,900; Wellington, 183,100; Christchurch, 159,400; Dunedin, 87,700.

Physically the islands of N.Z. form part of the great festoon of islands which begins at New Guinea, ends at Antipodes I., and includes New Caledonia. They are separated by the deep Tasman sea from the E. coast of Australia.

South Island consists of a great mt. range, the Southern Alps, a vast system which includes alps or summer pastures, alpine lakes, glaciers, and snowfields. Mt. Cook (Maori *Aorangi*, sky piercer) is 12,349 ft.; and 17 other peaks are more than 10,000 ft. The W. slopes almost reach the shore, and are clothed with mighty fern forests; in the S., Milford sound is the best known fjord; the E. slopes reach the Canterbury Plains.

North Island consists of a highland reaching from Mt. Egmont in the S.W. to East Cape in the N.E., and two peninsulas—one a lowland terminating in the N.W. in Cape Maria van Diemen. the

other mountainous and reaching Cook Strait. None of the mountain ranges is related to the Southern Alps; the Ruahine and Tararua ranges of the S.E. peninsula are, however, related to the Kaikouras ranges in the N.E. of South Island.

The Rotorua district is world-famous for its hot springs, geysers, and sinter terraces, where the Maoris cook potatoes by dipping them in the boiling springs. Of the volcanoes, snow-capped Ruapehu, 9,175 ft., has at its summit a crater lake of warm water, which boils and is heaved into the air and splashes the surrounding ice cliffs; Ngauruhoe, 7,515 ft., and Tongariro, 6,140 ft., are quiescent; Mt. Egmont, 8,260 ft., is extinct; Whakaari, White Island, in the bay of Plenty, is active. In South Island there are hot springs, which occasionally bubble into icy cold water flowing away from a glacier snout. Lakes Taupo, 238 sq. m. in extent, and Rotorua in North Island differ in character from Wakatipu, 114 sq. m., Te Anau, 132 sq. m., and the smaller alpine lakes of South Island. Of the S.I. glaciers Tasman, 18 m. long, is reputed to be the largest glacier outside the Polar regions; Murchison, 11 m. long, is next in size. The Waikato and Wanganui in N.I., and Clutha, Buller, and Grey in S.I. are the chief rivers. Few of N.Z.'s rivers are navigable: they are swiftly flowing and their issue into the sea is usually obstructed by formidable bars.

The climate is equable and provides probably the best example in the world of the insular type. There is an average of about 2,000 hrs. of sunshine a year, c. 600 hrs. more than in Great Britain. N.I. is warmer than S.I.: at Auckland the mean temps. of the warmest and coldest months are 66° F. and 52° F.; at Dunedin 59° F. and 43° F. The rains are sufficient; in N.I. they exceed 35 ins. everywhere, in S.I. the W. coast is very wet, over 100 ins. annually at Hokitika, and the E. plains are dry, the Canterbury Plains having less than 30 ins. The indigenous animals include two kinds of bat, the only land mammals; kiwis, penguins, and other birds which cannot fly, keas, cormorants; lizards, butterflies, and moths. Europeans introduced the farm and domestic animals; deer, trout, pheasants, and quail; rabbits, stoats, and weasels, which became a scourge.

The flora is essentially of the forest type; the tree ferns of Westland grow in great profusion;

the kauri of the N., which reaches a height of more than 200 ft., the rimu, and similar trees are due to the heavy rains; the beeches of S.I. are a mountain type; New Zealand flax or phormium is a characteristic swamp growth. The only native grasses are tussock grasses; the turf grasses have all been introduced, chiefly from English seed.

The dominant industry is sheep rearing; parts of N.I. in the Wellington peninsula have



New Zealand. Map of the British Dominion, S.E. of Australia, in the S. Pacific Ocean

more sheep per sq. m. than any equivalent area in the world. At first meat was only a by-product; but when research in N.Z. produced refrigerating experiments and at last a satisfactory method was evolved for refrigerated steamships, Canterbury lamb became a highly important export. Dairy farming with its products, butter and cheese, are of growing importance. During 1947, N.Z. exported to Great Britain 82,720 tons of cheese and 120,309 tons of butter. Crops of wheat, oats, and barley are grown for local consumption. Kauri gum is dug in the Auckland pen., phormium is gathered from both wild and cultivated plants, timber is cut from the forests. Coal is mined on the W. coast of S.I., and gold in the Thames pen. In the valley of the Clutha, alluvial gold is dredged; New Zealanders were the pioneers in constructing dredgers suitable for such work.

A growing rly. system connects the chief towns. It is supplemented by a coastal steamer service, and a system of good

roads. N.Z. has more motor vehicles in proportion to her pop. than any other country except Canada and the U.S.A. The total number of motor vehicles in use, excluding official vehicles, was 315,500 in 1946.

The principal exports in order of value are wool, butter, frozen lamb, cheese, sheep skins, frozen mutton, seeds. The total value of the exports in 1946 was just under £100,000,000, of which 70 p.c. went to Great Britain and over 11 p.c. to other British countries. The total value of imports was £71,634,000, of which 47.7 p.c. came from the U.K. and 29.1 p.c. from other British countries. Principal imports are textiles, producers' equipment, including machinery and electrical goods, producers' materials, transport equipment, and manufactured foods. Wheat and sugar are also imported.

CONSTITUTION. The Dominion, officially a colony from 1840 to 1907, is an independent, self-governing member of the British Commonwealth of nations with high commissioners in London, Canberra, and Ottawa, ministers in Washington and Moscow. N.Z. is governed by a gov.-gen., who is the personal representative of the king, but is in no way subject to the British govt. The N.Z. parl. system is modelled on that of the

U.K. The legislative council, or upper house, consists of 35 members who held office for life until the period of service was reduced to seven years. The members are nominated by the gov.-gen., on the advice of the govt. The council has no power to initiate or amend legislation imposing taxes or affecting revenue. The house of representatives, or lower house, consists of 80 members (four of them Maoris elected by Maoris), who are elected for three years. Members of both houses are paid. There are two parties, Labour and National. A Labour govt. was in office 1935-49.

**SOCIAL LEGISLATION.** N.Z. established a Public Trust office in 1872, and three years earlier a government annuities and life

settlement; Advances to Settlers Act; state fire and accident insurance, state control of water power, and state maternity homes. The Labour govt. has introduced new measures of state control and revised old ones. The state owns and runs rlys. and air lines, and some of the coal mines, forests, sawmills, and tourist resorts. The state-owned Reserve Bank gives effect to the financial policies of the govt. The Social Security Act 1938 provided health insurance and coordinated and improved existing pensions legislation. The social security system was still further advanced in 1945. The money for the system is found by a tax (in 1947, 1s. 6d. in the £) on all wages, salaries, and other incomes, including company income.

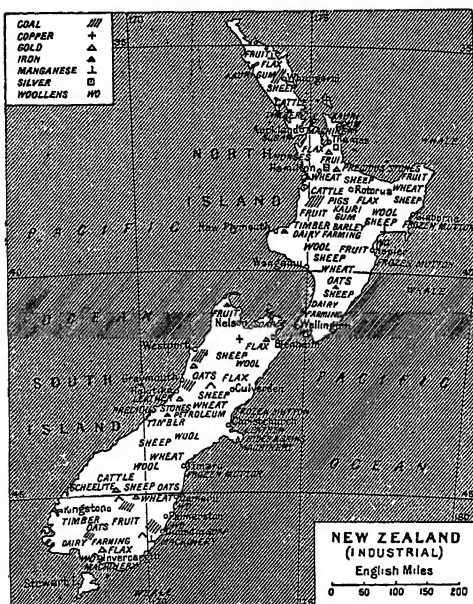
**HISTORY.** New Zealand was discovered by Tasman in 1642; he named Cape Maria van Diemen after the wife of the governor of the Indies. The next European visitor was Capt. Cook, who came in 1769, 1773, and 1777. British, French, and Spanish ships arrived during the next 20 years. In 1815 the first mission was established in the bay of Islands. The first attempt at colonisation was made in 1825, but failed. In 1840 Wellington was founded, and Capt. Hobson proclaimed the

the war by New Zealand troops. Later, New Zealanders helped to defend the Suez canal. A force went to Gallipoli, April, 1915, and with the Australians—the combined force known as the Anzacs—took part in the landing at Anzac Cove and subsequent operations.

In the Second Great War, New Zealand declared war against Germany a few minutes after the U.K. She sent some 135,000 men overseas, and they suffered over 30,000 casualties (10,000 killed, 19,000 wounded, besides missing). The New Zealand armoured div. did magnificent service in N. Africa and in Italy (see Italy: Campaign in, 1943-45; North Africa Campaign).

**EDUCATION.** The first schools were mission schools, and the first pupils Maoris. Until 1876 education was a provincial concern and most schools were denominational. The Education Act of 1877 provided that education should be free, secular, and compulsory, the simplest form of bible reading being banned as purely Protestant. At three a child may enter a free kindergarten. At five he (or she) may become a pupil at a coeducational state primary school in which there are free dental service, free milk daily, and apples in season. Attendance at school is compulsory between seven and 15. Thereafter the pupil may go to a secondary school and then to the university. The university of N.Z. consists of Otago university at Dunedin and university colleges at Auckland, Wellington, and Christchurch. There are a few private fee-charging schools where religious instruction may be provided. The tendency of many of N.Z.'s best children to go overseas and stay there, even when suitable vacancies are available in N.Z. causes some concern.

**THE PRESS AND LETTERS.** When the Labour govt. came to power in 1935 there were more than 40 daily papers, of which only one supported the govt. A new Labour daily, The Southern Cross, was published in Wellington in 1946. The New Zealand Herald, Auckland, has still the largest circulation of N.Z. papers. The Auckland Star, a lively evening paper, the Wellington Dominion, the Wellington Post, the Christchurch Press, and the Otago Daily Times also have large and influential circulations. Of the weekly press, the Auckland Weekly News and the Freeman have position and prestige. The Listener is an ex-



New Zealand. Map showing the distribution of resources and products throughout the Dominion

insurance office. The use of the govt. telephone is almost universal. Hospitals are government institutions. Labour legislation began with the Employment of Females Act of 1873, which established an 8-hr. day for women. Since 1891 all factory labour has been controlled, sweated labour abolished, and minimum wages determined. In addition a system of industrial conciliation and arbitration has been developed.

Richard Seddon, prime minister 1893-1906, introduced old age pensions (1898); superannuation for police, rly. servants, teachers; compulsory purchase of land for

sovereignty of Queen Victoria. Other settlements, Auckland, Nelson, etc., followed during the next decade.

The most important subsequent events were the Maori Wars, 1860-70, the discovery of gold in 1867, the adoption of refrigeration, and the part played by New Zealand in the two Great Wars.

During the First Great War the Dominion furnished 91,914 volunteer troops and 32,270 conscript troops. In Aug., 1914, a New Zealand force, acting in conjunction with British and Australian warships, seized German Samoa, which was garrisoned throughout

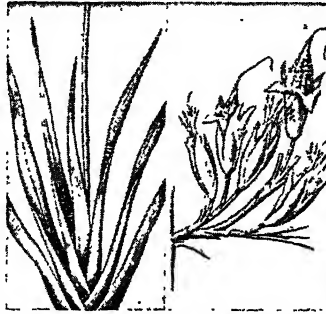
cellent broadcasting paper; the National Review combines both finance and culture.

Katherine Mansfield is the most distinguished of N.Z.'s writers, and N.Z. is the scene of her best stories. She is the interpreter of that transitional period in the life of Wellington when it developed from a small town to a big city. William Pember Reeves combined official duties in London with authorship. His best known work, *The Long White Cloud*, is one of the most charming and authoritative historical works in Empire literature. Jessie Mackay, strong supporter of women's rights, was a poetess of merit. Opportunities for publication are, however, rather limited, and so, as in so many other walks of life, the best writers have exercised their craft overseas.

Despite the fact that N.Z. landscapes are unsurpassed, there is no distinctive school of painting. The best known artist N.Z. has produced is David Low, the cartoonist. In music N.Z. has produced such able performers as Rosina Buckman and Oscar Natzka, singers, Colin Horsley, pianist, Douglas Lilburn, composer, and Warwick Braithwaite, conductor. A national symphony orchestra was formed in 1946.

**THE MAORIS.** The Maoris, who originally came from Polynesia, were in N.Z. hundreds of years before the whites arrived. They were fighters and cannibals with the reputation of being the wildest and most intractable race known. This reputation was a prime factor in deterring whites from visiting N.Z. Cook set an example by his (judged by the standards of the times) humane treatment of the Maoris. But many whalers and other trading adventurers were not so enlightened. It gradually came to be recognized that the Maoris were quick to react to the treatment they received. If consideration was shown them, they were appreciative, peaceful, and tractable. If they were treated harshly, they exacted a terrible revenge, slaying and eating their oppressors.

By the treaty of Waitangi, Feb. 6, 1840, the chiefs of N.Z. ceded to Queen Victoria all their rights and powers of sovereignty and in return were promised undisturbed possession of their lands and other property. The treaty, noble in conception, proved unworkable, in view of white immigration, and led to much hostility between the two peoples, culminating in the war of 1860-70.



New Zealand Flax. Left, sword-shaped leaves; right, flower-head with tubular blooms

The man most responsible for the present good relations between Maoris and whites was Sir George Grey, who was governor in 1846 and again in 1861-70, and from 1877 to 1884 premier of N.Z. He laboured to advance the status of the Maoris and to strengthen friendly relations between them and the whites, and laid the foundations of the mutual respect which the two peoples acquired for each other.

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**New Zealand, BANK OF.** Institution established by Act of the N.Z. parliament in 1861. Nearly all the capital stock is held by the government, to which the institution acts as banker. There are over 250 branches in New Zealand, Australia, and the Pacific islands. The head office is at Wellington, and the London office at 1, Queen Victoria St., E.C.4.

**New Zealand, UNIVERSITY OF.** State university of the dominion. An examining body only, it was founded in 1870. It consists of the university of Otago at Dunedin; Canterbury College at Christchurch; Auckland university col-

lege; and Victoria university college at Wellington, where are the headquarters. For agricultural students there are Lincoln College at Canterbury, and Massey Agricultural College at Palmerston North. The agent is addressed c/o High Commissioner for New Zealand, 415, Strand, London, W.C.2.

**New Zealand Flax** (*Phormium tenax*). Perennial herb of the family Liliaceae, native of New Zealand. The sword-shaped leathery leaves are 3 to 6 ft. in length, arranged in two ranks, the older leaves clasping the younger at their base. When old they split at the tip. The flower-stem is about 15 ft. high, branched above, the branches supporting the curved, tubular, red or yellow flowers. The leaves yield beautiful and strong fibres, which Capt. Cook found served the natives for a variety of purposes—clothing, nets, twine, etc.—but the presence of gum in the leaves, difficult to remove, has made preparation for export much too costly.

**New Zealand Spinach** OR **NEW ZEALAND ICE-PLANT** (*Tetragonia expansa*). Fleshy herb of the



New Zealand Spinach. Branches with foliage and flowers

family Aizoaceae. It is widely distributed in the S. hemisphere. It is more or less prostrate, with alternate oval, fleshy leaves, and inconspicuous, imperfect yellow flowers. It is frequently grown in Europe as a substitute for real spinach (*Spinacia oleracea*).

**Next Friend.** In English law, adult person who lends his name to a legal proceeding brought by or on behalf of an infant or lunatic. The action is entitled "A. B. (an infant) by C. D. his next friend." The next friend need not be any relation of the infant; and before his name can be used, he must sign a consent for that purpose. If the infant plaintiff loses with costs, the next friend is liable to





Niagara Falls. The world-famous sight on the Niagara river, N. America, seen from the Canadian side. On the left is the American Fall, on the north side of the river, to the right the Horseshoe, or Canadian Fall, on the south side. Dividing the two is the thickly wooded Goat Island, a New York State park

the defendant for these costs, though as a rule these are allowed him out of the infant's estate. See Insanity.

**Ney, MICHEL** (1769-1815). A French soldier. Born Jan. 10, 1769, at Saarlouis, he was the son of a cooper.



Joining the army in the ranks in 1788, he rose rapidly during the Revolutionary wars, and by 1796 had become a brigadier-general. The capture of Mannheim in 1799 added to his reputation,

and in 1804 he was created a marshal, having fought at Hohenlinden and other battles against the Austrians, and conducted a diplomatic mission to Switzerland. His storming of the entrenchments at Elchingen in 1805 brought a dukedom, and he distinguished himself at Jena, Eylau, and Friedland.

Sent to Spain in 1808, Ney returned from the Peninsula in 1812, having quarrelled with Masséna, under whom he had been called upon to serve in the invasion of Portugal. His victory at Borodino in the Russian campaign in

1812 brought him the title of prince of Moskova, and to him is due the credit of saving the remnants of the French army in the retreat. In 1813 he fought at Lützen, Bautzen, and Leipzig, but he made his peace with the Bourbon regime in 1814. When Napoleon returned from Elba, Ney was sent to oppose him, but he deserted with his army to his old master, fought a drawn battle with Wellington at Quatre Bras, and two days later, as one of Napoleon's favourites, commanded the centre at Waterloo. For his desertion he was sentenced to death and shot in Paris, Dec. 7, 1815; but it is hard to regard him as a traitor. There are studies by L. Blythe and P. Compton, both 1937.

**Ngami.** Lake in the N.W. of the Bechuanaland Protectorate. It was discovered by Livingstone in 1849. During recent years it seems to have been drying up, and the Okovango river which formerly discharged into it no longer does so. It has been proposed to divert rivers into the lake so as to make it into a reservoir for irrigation purposes.

**Niagara.** Town and tourist resort of Ontario, Canada. It stands on the Canadian side of the Niagara river, where it falls into Lake Ontario. It is 15 m. below the Falls, and is sometimes called Niagara-on-the-Lake. Known as

Newark, it was burned down by U.S. troops, Dec. 10, 1813, and was the first capital of Upper Canada, now Ontario. Pop. 1,541.

On the opposite (U.S.A.) side of the river is Fort Niagara. Here Hennepin and Lamott landed, Dec. 6, 1678. The French maintained a fort until it was taken by the British under Sir W. Johnson in 1759. It was an important point during the War of Independence, as it was in the war of 1812-14, by which time it had become the property of the U.S.A. On Dec. 29, 1813, a British force took it, but it was restored to the Americans. The magazine and other old buildings remain.

**Niagara Falls.** Famous falls on the lower portion of the Niagara river, N. America. The river, which is 33 m. long, separates in part the prov. of Ontario, Canada, from the state of New York, U.S.A., and flows from Lake Erie to Lake Ontario. During its course it makes a total descent of about 326 ft., 50 ft. being in the rapids above, and 111 ft. in those below, the Falls. The river is interspersed with islands, Grand Island being about 27 sq. m. in area. About 4 m. lower down the river is precipitated over a great limestone ledge.

The cataract is divided into two by Goat Island, the American Fall, on the N. side, being some

1,080 ft. wide and 167 ft. high, and the Horseshoe or Canadian Fall, on the S. side, 2,600 ft. across and 158 ft. high. The depth of water at the crest of the former is 10 ft., and of the latter 20 ft. The volume of water sweeping over both cataracts is computed at 100,000,000 cu. ft. per hour. The spectacle is illuminated by huge lamps. Below the descent the river plunges through a deep and narrow chasm to Lewiston, 7 m. distant. The walls of this ravine lie from 200 to 400 yds. apart, and rise sheer to a height of from 80 to 100 yds. About 2 m. below the Falls is the whirlpool.

The river is crossed by three bridges below the Falls, a suspen-

Niagara Falls park (1888) covering 154 acres, and the New York State park (1885) 115 acres. See Blondin.

**Niagara Falls.** City and port of entry of Ontario, Canada. It stands on the W. side of Niagara river, here crossed by three bridges about 2 m. below the Falls, being 82 m. from Toronto. On the opposite side of the river is the American city of Niagara Falls. The Canadian place is served by C.P.R., Michigan Central, New York Central and other rlys., while an electric rly. connects it with Toronto. Its enormous water power, generating electricity under the Ontario hydro-electric power commission's Queenston-Chippawa development, yields 525,000 h.p. which is employed for the factories here and for those of Toronto and other cities. A park, commemorating Queen Victoria, occupies a length of 2 m. along the river. The original name of the place was Clifton. It then became Drummondville, but was known as Niagara Falls when made a city in 1903. Pop. 20,589.

**Niagara Falls.** City and port of entry of New York state, U.S.A. It is in the co. of Niagara, on the river of that name, and extends for 7 m. above the celebrated falls. With Buffalo, 23 m. to S.E., it is connected by rly. It is the seat of a university, thrives on tourist traffic, and provides employment in hydro-electric projects, foundries, and the making of abrasives, paper, and cereal foods. The civic charter dates from 1892. Pop. 78,029.

**Niagara Series.** Subdivision of the Silurian system of rocks found in Canada and the U.S.A. The Niagara limestone forms the sill, slowly eroded through centuries, over which the great waterfall plunges. The series overlies the Clinton iron-bearing series which occurs in the Appalachians.

**Niamey.** Town of French W. Africa. The capital of the colony of the Niger, it is situated on the E. bank of the Niger river, 150 m. above the point where it enters Nigeria. Niamey trades in ivory and is a terminus of the trans-Saharan motor route. Pop. 5,000.

**Niam-Niam** (Great eaters). Dinka name for a negroid people on the watershed between the tributaries of the Bahr-el-Ghazal and the Welle basin, in Central Africa. They call themselves Zandé. Agile, round-headed, thick-lipped, chocolate-hued, they exhibit aboriginal Nuba elements

with Fula admixture. They are warriors and skilful iron-workers. See Negro.

**Nias.** An island of Indonesia. It is in the Malay Archipelago, off the W. coast of Sumatra. Its soil is extremely fertile, its inhabitants Malays akin to the Battas. Rice is the main product. Area, 1,800 sq. m.

**Nibelungenlied** (Ger., song of the Nibelungs). Medieval German epic. The unknown Austrian author composed the poem c. 1200 or earlier. The stanza consists of three lines with six accents and one with seven, and the poem, in 38 adventures, has two parts. The first part relates the story of Siegfried, his marriage to Kriemhild, her jealousy of Brunhild, and the murder of Siegfried by Hagen, the Nibelung; and the second part tells how Kriemhild, who had married Etzel or Attila, king of the Huns, avenges herself on the Nibelungs and is herself slain. The name Nibelungs, originally a perhaps mythical pygmy people, whose hoard Siegfried had won, is, in the *Nibelungenlied*, transferred to the Burgundian house ruling at Worms, who acquire the hoard through the murder of Siegfried. Their king, Gunther, brother of Kriemhild and husband of Brunhild, is the historic Gundahari, who was slain when the Burgundian kingdom of Worms was destroyed in 437.

The Icelandic *Völsunga Saga* and other versions preserve more primitive forms of the Siegfried legend than the *Nibelungenlied*, which eliminates many crude and mythological elements, and deepens the tragic motives. Its courtly and chivalric setting only slightly obscures the manners and ideas of an earlier pagan age. Of the many renderings of the *Nibelungenlied* into modern German, that of Simrock may be mentioned, and of English translations those by A. G. Foster-Barham, 1887, A. Horton, 1898, and in prose by M. Armour, 1897. Wagner's operatic cycle, *The Ring*, is based on the epic. See Brunhild; Siegfried; Wagner. *Pron.* Neebeloongenleed.

**Nicaea** (mod. Iznik). Ancient city of Bithynia, Asia Minor. The name was given by Lysimachus in honour of his wife to a city founded by Antigonus. The kings of Bithynia made it one of their two residences. It is celebrated as the scene of the general Church council 325 (v.i.). Nicaea long remained an important city; it was the capital of the Seljuk



Niagara Falls. Plan showing the position of the Falls and the adjacent Canadian and American shores

sion bridge for pedestrians and carriages a little distance below the cataract, and two railway bridges about 2 m. farther down. A cable car carries passengers immediately over the whirlpool. Since 1890 the water power has generated electricity, the water being drawn off through tunnels above the Falls and returned in a similar manner into the chasm below. The amount diverted for this purpose is limited to 36,000 cusecs on the Canadian side and 20,000 cusecs on the American. The shores along both sides of the Falls have been made government reservations, the Queen Victoria

sultan Soliman in 1078, and the seat of an Eastern empire after the conquest of Constantinople by the Latins in 1204.

**Nicaea, COUNCIL OF.** General council of the Church. It met June 19, 325, being convened by Constantine to settle the Arian controversy, determine the correct date for the observance of Easter, and consider other questions. Arius attended to defend his teaching, while the orthodox party was championed by Athanasius. The council formulated the nucleus of the Nicene Creed (*q.v.*). The teaching of Arius was condemned, and 14 of his 17 supporters submitted. It was settled that Easter should be a Sunday. Arius was banished to Illyria by Constantine, and his adherents exiled. *See* Arianism; Athanasius; Easter.

**Nicaragua.** Central American republic. It lies between the Pacific Ocean and the Caribbean Sea and between



Nicaragua arms

Costa Rica on the S. and Salvador and Honduras on the N. The E. coast, of which the N. section is known as the Mosquito Coast, is backed by an alluvial plain, beyond which lie the central mts., which rise to 7,000 ft. The E. is peopled by Indians and negroes from the West Indies, the W. by Spaniards, Indians, and people of mixed Spanish and Indian origin. The E. produces bananas, coconuts, and pineapples, the W. coffee, sugar-cane, cocoa. Area 57,143 sq. m. Pop. 1,389,000.

Extensive forests yield mahogany, cedar, gums, and medicinal plants. Over a million cattle provide hides for export. Gold and silver are mined; copper, tin, and zinc are known to occur. Managua is the capital; the W. ports Corinto and San Juan del Sur do more than two-thirds of the trade; the E. ports Bluefields, Pearl Lagoon, and Greytown (San Juan del Norte) are mainly interested in the fruit trade with U.S.A. The rly. runs inland from Corinto.

Nicaragua was peopled by the Aztecs, who have left here traces of their civilization. In 1522 the Spaniards landed and founded Granada, after which for nearly 300 years the country was under Spanish rule as a province of Guatemala. In 1821 it became an independent republic, and at the same time a series of wars began. These were with Costa Rica, Guatemala, and even Great Britain, which

claimed a protectorate over the Mosquito Coast, given up in 1860.

In the 20th century the U.S.A., taking an increasing interest in the affairs of the republic, found it advisable to intervene. Detachments of troops were sent to maintain the president, Adolfo Diaz, in power against his rivals. In 1927 peace was made between the contending factions, and a local constabulary under American officers was founded, but this did not prevent desultory fighting between U.S. marines and the nationalists. In 1931 Managua was devastated by an earthquake.

Nicaragua drew up a new constitution on March 22, 1939, providing for a congress with two houses; a chamber of deputies (one for each 30,000 inhabitants) of 40 members and a senate of 15, elected by popular vote for 6 years, as also is the president. The prevailing religion is R.C. Teaching of English in the schools is compulsory. In 1941 a university was established at Managua. Aviation is being developed, and there are several commercial and military airports. Roughly a third of the country grows timber, but gold and coffee are the main exports. *See* Central America. *Consult* An Economic and Financial Survey, W. W. Cumberland, 1928; Through Unknown Nicaragua, M. G. Palmer, 1946.

**Nicaragua.** Lake of Central America. It lies in the S.W. of Nicaragua, its S. end bordering on Costa Rica, and is separated from the Pacific by a narrow isthmus. Oval in outline, it measures 110 m. by 45 m. and has an area of about 2,990 sq. m. The depth varies between 15 ft. and 250 ft. It receives the surplus waters of Lake Managua at its N. end, and

discharges its own through the San Juan into the Caribbean Sea.

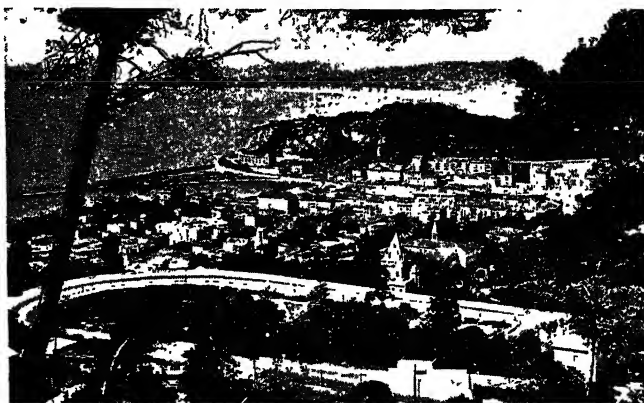
Surveys have proved that it was once continuous with Lake Managua and discharged into the Pacific. It contains islands, the largest of which is Zapatera. Sculptured stones, massive idols, and other antiquities have been discovered on its shores. Water fowl and alligators abound. Granada (*q.v.*) at the N.W. corner is the principal town on the lake.

**Nicaragua Canal.** Proposed ship canal between the Caribbean Sea and the Pacific Ocean through L. Nicaragua. In 1849 an American company obtained a concession from the Nicaraguan government; but no work was done, and the project remained in abeyance after the construction of the Panama Canal (*q.v.*).

**Nicarao** OR NIKUITAN. American Indian tribe which had reached a stage of advanced culture in Central America at the time of the Spanish conquest. Of Aztec speech, they established tribal communities between Lake Nicaragua and the Pacific coast, as well as on the lake islands. Remoter offshoots reached the Nicoya peninsula and the W. end of the Chiriqui lagoon. They introduced human sacrifices and certain forms of Mexican culture into Nicaragua and are reputed to have kept registers of property.

**Nice.** French city and pleasure resort, capital of the dept. of Alpes-Maritimes. It stands on the Baie des Anges, an opening of the Mediterranean, at the mouth of the Paillon. It is 740 m. by rly. S.E. of Paris, and is noted for its warm climate (mean temp. 60°).

It consists of a small medieval town, with ruins of a castle on the hill, a cathedral (1560), the church



Nice, France. A view across the old town and port to Mont Boron. In the foreground is one of the three main roads leading to Monte Carlo

of S. Jacques (16th century), and other old buildings, and a modern city, most of it built in the 19th century. Its main thoroughfare is the Promenade des Anglais, along the coast, which contains luxurious hotels and shops. Just off it is a remarkable memorial to the victims of the First Great War, carved out of the solid rock. The city has an airport, an observatory, museums, and libraries. There are some industries, such as the manufacture of chocolates and perfumes, but the tourist traffic is the chief source of the city's prosperity. It was founded about 300 B.C. as a satellite town of Marseilles, about 100 m. away, and has been since A.D. 300 the seat of a bishopric. It fell to Savoy in 1388, and in 1543 was pillaged by Frederick Barbarossa who carried off 2,500 captives. It changed hands a number of times before in 1860 it was ceded to France by Sardinia. Its recovery for Italy was one of the aims of Mussolini. After the Franco-Italian armistice of June, 1940, it lay in the demilitarised zone beyond the Italian zone of occupation. The Italians occupied it in Nov., 1942, German troops taking over from them Aug., 1943. It was liberated by the U.S. 7th army, Aug. 30, 1944, little damaged except in the harbour area. Pop 211,165.



Nice arms

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**Nicene Creed.** Statement of faith drawn up, 325, at the council of Nicaea, (q.v.). It was formerly maintained that the creed of Nicaea was based upon that of Caesarea, but it is rather a compendium of the baptismal creeds of Caesarea, Alexandria, Jerusalem, and Antioch. At subsequent councils additional phrases were added to the Nicene Creed (originally anti-Arian) in order to check other heresies, e.g. at Constantinople, 381, to refute the teaching of Apollinarius, Macedonius, and Marcellus; at Ephesus, 431, and Chalcedon, 451, against Nestorianism and Eutyches. Still later additions were made at the councils of Toledo, 447 and 589, and at Gentilly, 767, when the *filioque* clause was added, concerning the procession of the Holy Spirit from the Father and the Son, a claim not finally adopted in the Roman version of the Nicene Creed until 1014. This was and remains one of the

matters in dispute between the Western and Orthodox Churches. The use of the Nicene Creed has been confined to the Mass or Holy Communion in both Churches. As revised at Chalcedon, it is the definitive creed of Christendom. See Christianity; Church; Creed. Consult Chalcedon, J. S. MacArthur, 1931; History of the Creeds, F. J. Badcock, 1938.

**Nicephorus.** Name of three East Roman emperors. The first seized the throne from the empress Irene in 802, and was slain during an invasion of Bulgaria in 811. The second who had been an army commander, reigned from 963 until as the result of a conspiracy by his wife and nephew he was assassinated in 969.

Nicephorus III was emperor 1078-81. General of the army of the East under Michael VII, on the latter's resignation he was proclaimed emperor by the troops at Nicaea and crowned in Constantinople, April 3, 1078. During his reign the Seljuk Turks gained possession of Asia Minor except the coasts, and lower Italy fell into the hands of the Normans. His general, Alexius Comnenus (q.v.) who had hitherto loyally supported him, raised the standard of revolt, and deposed Nicephorus who retired to a monastery. He was the last emperor of the Armenian or Macedonian dynasty, which had lasted from 867. See Byzantine Empire. Pron. Niseeforus.

**Nicholas OR NICOLAS** (d. c. 342). Bishop and saint. A native of Patara, in Lycia, Asia Minor, he became archbishop of Myra, and opposed the Arians at the council of Nicaea. Buried in his cathedral at Myra, his supposed remains were re-interred May 9, 1087, in the church of San Nicola, Bari, Italy, where they are visited annually by thousands of pilgrims. He is the patron saint of Russia and of seafarers, travellers, merchants, children, and those overtaken by sudden danger. The popular name Santa Claus is a corruption of S. Nicholas. His festival is kept on Dec. 6. In addition to the cathedral at Newcastle and a chapel in York Minster, more than 370 English churches are dedicated to him and he is the subject of notable works by Titian, Lorenzo Lotto, Raphael, and other artists, and of innumerable legends.

**Nicholas.** Name of five popes. Nicholas I, pope 858-67, largely developed the papal power, excommunicating Photius, the intruded patriarch of Constantinople, and various Frankish arch-

bishops who disputed the papal supremacy. Nicholas II, pope 1058-61, was the nominee of Hildebrand. The anti-pope Benedict X was deposed in his favour, and his chief work was to free the papal elections from the Roman factions and the control of the emperor. His name was Gerhard of Burgundy. Nicholas III belonged to the Roman Orsini family and was pope 1277-80. His policy was to strengthen the papacy by checking the imperial influence in Italy. He made the Vatican the official papal residence. Nicholas IV, who reigned 1288-92, was of humble family and the first Franciscan pope. His financial measures gave the college of cardinals independence.

**Nicholas V** (1397-1455). Pope 1447-55. Tommaso Parentucelli, a native of Liguria, was educated at Bologna and became its bishop in 1443. He was created cardinal in 1446, and elected pope the following year. His pontificate was notable for the architectural improvements carried out in Rome: the building of churches, the paving of streets, the provision of an adequate water supply by means of the ancient aqueducts on which Rome had once depended; the rebuilding of the Vatican and the basilica of S. Peter, and the foundation of the Vatican library, which Nicholas also enriched with many treasures. For Frederick III, 1452, he performed the last imperial coronation in Rome. Nicholas died March 24-25, 1455.

**Nicholas I** (1796-1855). Tsar of Russia. Born at Tsarkoe-Selo (now Pushkin), July 6, 1796, third



Nicholas I,  
Tsar of Russia

son of Paul I and Maria Feodorovna of Württemberg, he received a careful education under his mother's supervision, and in 1814-15 visited several European countries. On his return to Russia, July 13, 1817, he married Charlotte, eldest daughter of Frederick William III of Prussia. His elder brother Constantine renouncing his claim to the throne, Nicholas succeeded his eldest brother Alexander I, Dec. 1, 1825, and was formally crowned at Moscow, Sept. 3, 1826.

His accession was the occasion of a mutiny among Constantine's adherents in the army, in dealing with which he displayed great

personal courage and firmness. His foreign policy was directed towards the East, particularly the conquest of Turkey, which power he described as "the sick man of Europe." The war with Persia, concluded Feb. 28, 1828, much increased Russia's foreign territory. Nicholas died March 2, 1855, six months before the fall of Sevastopol in the Crimean War.

**Nicholas II** (1868–1918). Tsar of Russia. Eldest son of Alexander III, he was born at Tsarskoe-Selo, May 18, 1868, and educated in modern languages and science by Gen. Danilovitch, director of St. Petersburg academy. He travelled in the Far East during 1890–91, and narrowly escaped assassination in Japan. He succeeded to the throne, Nov. 1, 1894, and married princess Alix of Hesse, Nov. 26; the latter took the name of Alexandra (q.v.). Nicholas was crowned at Moscow in May, 1896.

At the beginning of his reign liberal influences gained great strength, and dissatisfaction with the government's policy was widespread. Kindly, desiring peace, and believing in the divine right of kings, Nicholas was unfitted for the task of his high office. Though convinced of his exalted mission, he allowed constitutional reforms, only to nullify them by subsequent actions. The empress's influence increased his fatalistic tendencies; he showed neither the courage to maintain autocratic rule, nor the resolution to adapt himself to the liberal movements of his time. The First Great War exposed the internal weakness of the régime, and the baleful influence of Rasputin hastened the final collapse. Nicholas signed on demand and without protest the decree of his abdication March 15, 1917. He retired to the Crimea, but was later arrested, transferred to Tsarskoe-Selo, and thence to Tobolsk where he was interned with his wife, son, and four daughters. The imperial family was then transferred to Ekaterinburg (Sverdlovsk) in the Urals, and with Kolchak's advance their fate was decided on by the Soviet leaders in Moscow. But the Communists of Ekaterinburg were determined to put the tsar and his family to death, and the commissar Yourkovsky was responsible for carrying out the assassination, July



Nicholas II,  
Tsar of Russia

16, 1918. The corpses were removed to an isolated spot in the neighbourhood of Ekaterinburg, and burnt. The tsar's correspondence with his wife appeared in English in 1929. Consult The Emperor Nicholas II, Sir J. Hanbury Williams, 1922; Nicholas II, C. Radziwill, 1931.

**Nicholas** (1841–1921). King of Montenegro. He was born Sept. 25, 1841, and educated mainly in Paris. In Aug., 1860, he succeeded his murdered uncle Danilo as prince of Montenegro and he was still reigning when the Great War broke out in 1914. The independence of his country was recognized in 1878, and in 1910 he took the title of king. In 1916, having joined in the First Great War on the side of Serbia, he was driven out and took refuge in France. He resigned his rights to Montenegro, and died at Antibes, March 1, 1921. See Montenegro.

**Nicholas Nickleby**. Charles Dickens's second novel, published in monthly parts, April, 1838–Oct., 1839, with illustrations by Phiz. Designed first to expose the "monstrous neglect" of education and the crying evils of the cheap boarding-schools for boys at that time still common in the N. of England, the book contains some of Dickens's best known creations, including Wackford Squeers, master of Dotheboys Hall; the Cheeryble Brothers, benefactors of Nicholas; Vincent Crummles, the itinerant theatrical manager, and his family, and Mr. and Mrs. Mantalini. The novel was dramatised by E. Stirling, 1838 (before the monthly parts were completed, and much to Dickens's anger), and A. Halliday, 1875. A film version was shown in 1947.

**Nichols, (JOHN) BEVERLEY** (b. 1898). British writer and critic. Born Sept. 9, 1898, he was educated at Marlborough, and Balliol, Oxford. His first novel, *Prelude*, appeared in 1920, and he became a best-seller with *Crazy Pavements*, 1927, and *Evensong* (later dramatised in collaboration with E. Knoblock), 1932. Other popular successes included *Twenty-Five* (autobiography), 1926; *The Star-Spangled Manner* (U.S.A. impressions), 1928; *Down the Garden Path* (gardening essays), 1932; *The Fool Hath Said* (religious essays), 1936; *Men Do Not Weep*, 1941; *Verdict on India*, 1944. *Cry Havoc*, 1933, was an emphatic statement of pacifism, but after the emergence of Hitler he changed his views. He wrote the book and composed the music (with V.

Ellis) of Cochran's *Revue*, 1930. His other plays include *Avalanche*, 1931, and *Floodlight*, 1937.

**Nichols, JOHN BOWYER** (1779–1863). British printer and antiquary. He was born in London, July 15, 1779, and educated at St. Paul's School, in 1796 entering his father's printing business. Long associated with *The Gentleman's Magazine*, he was its proprietor, 1834–56. He was one of the printers to Parliament. His chief work was the publication of county histories. Fellow of the Linnean Society, 1812, and of the Society of Antiquaries, 1818, he died at Ealing, Oct. 19, 1863.

**Nichols, ROBERT MALISE BOWYER** (1893–1944). British poet. Born Sept. 6, 1893, he was educated at Winchester, and Trinity College, Oxford. He made his reputation as a lyric poet during the First Great War when his first collection of poems *Invocation* appeared in 1915. Other volumes included *Ardours and Endurances*, 1917; *Aurelia*, 1920; *Fisbo*, 1934; *Such was my Singing*, 1942. He also wrote plays, including *Guilty Souls*, 1922; *Wings over Europe* (with Maurice Browne), 1929. Nichols, who had been professor of English literature at Tokyo university, 1921–24, died Dec. 17, 1944.

**Nicholson, JOHN** (1821–57). A British soldier and administrator. Born in Ireland, Dec. 11, 1821, he was educated at Dungannon. He entered the service of the E. India Co. in 1839, and in 1841 was taken prisoner by the Afghans, but he soon escaped, and in 1845–46



John Nicholson,  
British soldier

he served against the Sikhs, as he did when the war broke out again in 1848. Appointed a deputy commissioner in the Punjab after its annexation, Nicholson proved himself an administrator of extraordinary gifts, exerting such a marked influence over the natives that he was worshipped by a brotherhood of fakirs.

When the mutiny broke out in 1857, he checked the movement in his own district, and then took command of a mobile column and advanced to Delhi. Marching at a tremendous pace, he destroyed on the way a body of rebels near Gurdaspur, and then reached the besieged city. On Sept. 14, when leading the storming party, he was mortally wounded, and he died



Sept. 23, 1857. In the Punjab his fearlessness and justice were a constant source of wonder, and the impression he made on his contemporaries was summed up by Lord Roberts, who said that Nicholson impressed him more powerfully than any man he had ever met. *See Indian Mutiny; consult also Life*, L. J. Trotter, 1904.

**Nicholson**, SIR WILLIAM (NEWZAM PRIOR) (1872-1949). British artist. Born at Newark-on-Trent,

he was educated there, and first became known to the general public by his illustrations to *An Alphabet*, and *An Almanac of Twelve Sports* (with Rudyard Kipling), 1898, and London types (with W. E. Henley), 1898. The posters he designed in collaboration with his brother-in-law James Pryde (the "Beggarsstaff Brothers") were the first to draw attention to the artistic possibilities of the new medium. His later reputation was based chiefly on his ability as a portrait-painter, the best known examples of which included W. E. Henley, Gertrude Jekyll (both in the Tate Gallery), George Saintsbury, Walter Greaves, Ursula Lutyens, Lord Horder, and Marie Tempest. He also painted landscapes and still-lives; of the latter the best known is probably *The Hundred Jugs* (Liverpool Art Gallery). He was knighted in 1936, and his publications included *Characters of Romance*, 1900; *Clever Bill*, 1926; *A Book of Blokes*, 1930. He died May 16, 1949. *Consult Life*, M. Steen, 1943.

His son Ben Nicholson (b. 1894), educated at Tours, Milan, and Pasadena, U.S.A., became a leading member of the Constructivist group of painters. An abstractionist, he was concerned primarily with planes and surfaces. He held one-man exhibitions at the leading London galleries.

**Nicias** (d. 413 B.C.). Athenian statesman and general during the Peloponnesian War. In opposition to the democratic party, he strongly advocated bringing the war to an end while favourable peace terms could be obtained, and took a leading part in negotiating the short-lived peace of 421 B.C. Having already achieved several military successes, he was chosen chief commander of the expedition to Sicily in 415 B.C., though personally

opposed to it. At first he met with some success, but the arrival of the Spartan Gylippus changed the situation, and though reinforced by Demosthenes, Nicias was defeated both by sea and by land. The Athenian force surrendered, and Nicias and Demosthenes were put to death. *See Peloponnesian War; Syracuse*.

**Nickar Nut** (*Caesalpinia bonduc* and *C. bonducella*). Seed of evergreen shrubs of the family Leguminosae. Natives of tropical sea shores, they are trailing plants with the leaves twice divided into small leaflets. The rusty yellow flowers form sprays, and are followed by prickly pods containing one to three large hard and polished seeds, which have a very bitter taste. In native Indian medical practice they are used as a tonic and fever cure, while the oil compressed from them is used in palsy. They are also strung together as necklaces and rosaries.

**Nickel**. One of the metallic elements. The name originated in Germany, where nickel is present in small amounts in the copper of the Harz mts. Finding the ore would not produce readily-worked copper, early miners named it *Kupfernickel*, Nicholas (or Old Nick) copper. The metal was isolated by Cronstedt in 1751. The element, chemical symbol Ni, is in the transitional group of the first long period of the periodic table, next to cobalt, iron, manganese, and chromium, while copper is its neighbour on the other side. It has an atomic number, 28; atomic weight, 58.69; melting point, 1,455° C.; boiling point, 2,340° C.; specific gravity, 8.90; electrical conductivity, 24 (silver being 100); crystal forms (a) alpha-nickel, close-packed hexagonal, with lattice constants,  $a=2.49$  and  $c=4.08$  and an interatomic distance of 2.49 Ångström units; and (b) beta-nickel, face-centred cubic, with lattice constant  $a=3.517$  and an interatomic distance of 2.486 Ångströms.

The most important ore mineral of nickel is pentlandite, a nickel-iron sulphide. Less important are millerite, nickel sulphide; niccolite, nickel arsenide; and garnierite, a hydrated nickeliferous magnesium silicate. More than 80 p.c. of the world's nickel is produced in the Sudbury dist. of Ont., Canada, where pentlandite, (FeNi)S, occurs with pyrrhotite,  $\text{Fe}_9\text{S}_{11}$ , and chalcopyrite,  $\text{CuFeS}_2$ ; the average ore runs 3 p.c. nickel and 2 p.c. copper. This area also produces platinum

as a by-product. The ore-bodies at Sudbury are found near the bottom of a sheet of norite, a basic igneous rock, which has been intruded to form a large elliptical basin. Smaller nickeliferous sulphide deposits similarly associated with basic igneous rocks occur also near Petsamo in the U.S.S.R. and in Norway.

Garnierite, (NiMg)  $\text{O.SiO}_2 \cdot x\text{H}_2\text{O}$ , occurs very sporadically as small veins and pockets in weathered serpentine rocks in the French colony of New Caledonia. Before 1905, the world's chief source of nickel, these deposits supplied only some 6 p.c. of the total after production began in the Sudbury dist. Other producers of nickel are Greece, Burma, the U.S.A., French Morocco, and Brazil.

In Canada, the ore, after crushing, is concentrated by selective flotation, giving a copper concentrate containing over 50 p.c. of the copper and very little nickel, and a nickel concentrate containing nearly all the nickel and the rest of the copper, with iron and sulphur. After thickening, the nickel concentrate, which is about 4 p.c. nickel, is partially roasted in mechanical roasters, some of the sulphur being left, and is then smelted in reverberatory furnaces. Converter slag is added to the reverberatory furnace as a flux and the product separates into two layers, the top layer of slag being run off continuously to waste, as it contains less than 0.05 p.c. of copper and nickel, the lower layer being a copper-nickel matte about 16 p.c. nickel, 9 p.c. copper, 40 p.c. iron, 28 p.c. sulphur. The matte is "blown" in horizontal converters; the iron, which is oxidised by the air, combines with added silica, to form a slag which is then returned to the reverberatory furnaces.

The product may then be subjected to one of several processes. The Orford process depends on the fact that copper sulphide is much more soluble in sodium sulphide than is nickel sulphide. The matte produced by the converters is therefore crushed, mixed with nitre-cake or sodium sulphate and coke, and smelted. The product, when cast, separates into two layers, the "tops" being treated for recovery of copper, the "bottoms" for the production of pure nickel. Another process is to cool the matte from the converters in such conditions that the nickel and copper sulphides crystallise separately. After crushing, the sulphides can then be separated by



Sir W. Nicholson,  
British artist

flotation. In both processes concentration is improved by repeating, and the final product can be roasted to oxide and then reduced with carbon to a rather impure nickel, which can be refined by electrolysis; the anode sludge from this last process contains all the precious metals, which at Acton, Ont., are recovered and then purified.

Two other processes produce pure nickel directly from the bessemerised matte. About 20 p.c. of the Canadian matte is sent after a preliminary roast to Clydach, S. Wales, to be treated by the Mond process. The matte is calcined to remove most of the sulphur, leached with dilute acids to remove some of the copper, and dried. The nickel is then reduced by water gas at 350° to 400° C., the reduction being effected chiefly by the hydrogen present in the gas, so that the waste gas is high in carbon monoxide and thus suitable for the next stage, which depends on the formation of a volatile nickel carbonyl,  $\text{Ni(CO)}_4$ . This is volatilised at 60° C. and the resulting gas is then decomposed at 180° C. to pure metallic nickel and carbon monoxide gas. Some of the nickel carbonyl is condensed to a liquid in a medium-pressure plant, so as to yield, when it is decomposed, pure carbon monoxide for boosting the other gases. Bottoms from the Orford process are suitable for the Mond process. The Hybinette process, used in Quebec, involves the direct electrolysis of the cemented matte under special conditions with bagged anodes. The copper is first leached out and treated electrolytically in separate tanks.

The New Caledonian ore, a silicate containing little or no sulphur, and copper, is smelted with gypsum to give a nickel-iron matte, which is roasted, smelted with silica, bessemerised, and the pure matte again roasted to nickel oxide, which can be reduced with carbon to nickel.

Pure nickel is silvery-white with a high lustre. Much commercial nickel is hard and rather brittle, owing to the presence of small amounts of various impurities; the pure metal is malleable and ductile, rather harder and stronger than iron. It is magnetic, though less so than iron. Nickel has a high melting point and is resistant to abrasion. The addition of small amounts of manganese or magnesium as deoxidisers produces "malleable" nickel, which can be hot or cold-rolled, drawn into

wire, forged, and cast. Its resistance to corrosion makes it suitable for cooking utensils and laboratory and dairy apparatus. Pure nickel is used in many countries, e.g. India, for coinage. Iron, copper, zinc, brass, and many other alloys are electroplated with nickel, the plating being carried out in lead- or rubber-lined tanks; if high current densities are used, the solution is agitated by blowing compressed air into the tanks. Nickel-plating is used to improve the appearance of articles, and to increase their resistance to corrosion; it is also used as a basis for chromium plating, to give a very bright finish.

Of non-ferrous alloys of nickel, the widest in range are the cupronickels (*q.v.*). Nickel and copper are mutually soluble in all proportions. Up to 15 p.c. nickel, the alloys retain a coppery colour, but the 20 p.c. nickel alloy is white. Nickel silvers (formerly called German silver) are alloys of nickel with copper and zinc. They have a pleasant colour and many of them are stronger and more resistant to corrosion than is brass. They are the basis for E.P.N.S. (electro-plated nickel silver) in cutlery; and are also used architecturally. Nickel-chromium and nickel-chromium-iron alloys have many high temp. applications as they do not oxidise or corrode readily; they are used to make electric furnaces. Special nickel and chromium alloys were developed to withstand the very heavy corrosion and stresses in jet turbine engines. A very powerful permanent magnet material contains 10 p.c. aluminium, 18 p.c. nickel, 12 p.c. cobalt, 6 p.c. copper, and 54 p.c. iron. Alloys containing c. 36 p.c. of nickel have an unusually low thermal expansion.

But most nickel, which forms solid solutions with iron in all proportions, is used in steel alloys. The ordinary nickel steels are about 3.5 p.c. nickel; they are used for automobile parts, bridges, locomotive forgings and castings, etc. The steels with low carbon content are used for case-hardening. The nickel-chromium steels have excellent physical properties. Nickel is also sometimes added to cast irons. Various nickel salts are used in plating, and as catalysts. *See Alloy; Copper; Metallurgy; Mond; Nickel-Chrome Steels.*

**Nickel.** Popular name of U.S. coin, value 5 cents. Except for a period during the Second Great War when an alloy of silver, copper and manganese was used, the coin

has been made of 25 p.c. nickel and 75 p.c. copper.

**Nickel Blooms.** Group of hydrated and oxidised nickel minerals which form on the exterior of primary nickel minerals. They are all green in colour and are useful indicators of the presence of nickel mineralisation. The nickel blooms include anabergite, a hydrated nickel arsenate; morrenosite, hydrated nickel sulphate; and zaraitite, a hydrated basic nickel carbonate.

**Nickel-Chrome Steels.** Group of alloy steels. Such steels have up to  $4\frac{1}{2}$  p.c. nickel and  $1\frac{1}{2}$  p.c. chromium, with varying amounts of carbon. Those with about 0.15 p.c. carbon are suitable for case-hardening (*q.v.*); those with about 0.35 p.c. are easily hardened and tempered, in which condition they are always used. They have good resistance to fatigue and wear, and are therefore suitable for armour-plate and for automobile and aero-engine parts. A tendency to brittleness on tempering is eliminated by the addition of a small amount of molybdenum. Stainless steels have much larger amounts of nickel and chromium. *See Case-hardening; Chrome Steel; Chromium; Steel.*

**Nicobar Islands.** Group of islands in the Bay of Bengal, attached to the dominion of India. Of the 19 islands 12 are inhabited. They lie S. of the Andaman Islands, to which they are attached administratively, and from which they are about 75 m. distant. The natives produce copra. The group was ceded to Britain by the Dutch in 1869. Japanese forces occupied the islands June 13, 1942, until the defeat of Japan in 1945. Area 635 sq. m. Pop. 9,481.

**Nicodemus.** Biblical character. A Pharisee and member of the Sanhedrin, he was converted to a belief in the doctrines of Christ, but, afraid to make open confession of his faith (John 3, *vv.* 1-21), raised no protest when Jesus was condemned to death. After the crucifixion, stricken with remorse, he assisted Joseph of Arimathea in the burial of the body of Jesus (John 20, *v.* 39).

**Nicola, ENRICO DE** (b. 1877). First president of Italy. *See N.V.*

**Nicolai, CARL OTTO EHRENFRIED** (1810-1849). German composer. Born at Königsberg, June 9, 1810, he studied music at Berlin, and became organist at the chapel of the Prussian embassy at Rome, 1833. He composed a series of operas in the taste of the day, e.g. *Enrico Secondo*, and *Rosmonda*

d'Inghilterra, 1840, and was conductor at the court opera at Vienna, 1841-47. During his appointment there his operas *Templario*, 1841, and *Die Heimkehr des Verbannten*, 1844, were produced. His most popular work, however, was *Die lustigen Weiber von Windsor* (The Merry Wives of Windsor), first performed in Berlin, 1849, and in London (as *Falstaff*), 1864. The overture holds a permanent place in concert repertory. Nicolai died May 11, 1849.

**Nicolaitans.** Heretical sect which arose in the second century in the Christian Church. Their doctrines are associated with that of Balaam (Rev. 2, v. 14; Jude; 2 Pet. v. 1). Regarding as obsolete the injunctions of Deut. 23, vv. 17-18, and perhaps affected by the pagan rites connected with the worship of Dionysus and Aphrodite, they seem to have adopted a form of fanatical libertinism which attached to itself other heresies. The alleged leadership of the sect by Nicholas the deacon and proselyte of Antioch is unproven.

**Nicoll, Sir William Robertson** (1851-1923). A British journalist and theologian. Born at Lumsden, Aberdeenshire, Oct. 10, 1851, and educated at Aberdeen university, he was a Free Church minister from 1874 to 1885. While a minister at Kelso he was literary adviser to an Edinburgh publisher, and in 1884 was appointed editor to *The Expositor*. He founded *The British Weekly*, 1886; *The Bookman*, 1891; *The Woman at Home* (in cooperation with Annie S. Swan), 1893, and other periodicals, and acted as literary adviser to Hodder & Stoughton (*q.v.*). Under his editorship *The British Weekly* became a journal of national influence. His weekly article, *The Correspondence of Claudius Clear*, was a popular feature.

He was not only a leader in the literary life of his time, but took a prominent part in social reform and politics. He was knighted in 1909, and made a companion of honour in 1921. He wrote extensively on literature and theology, his works including *Life of James Macdonell*, 1890; *The Return to the Cross*, 1897; *Letters on Life*, 1901; *My Father*, 1908; *Life of Ian MacLaren*, 1908; and *A Book-*

*man's Letters*, 1913. He edited *The Expositor's Greek Testament* and the *Works of Charlotte Brontë*. He died May 4, 1923.

**Nicolle, CHARLES** (b. 1866). French bacteriologist. He was born at Rouen, Sept. 21, 1866, and in 1895 became head of the bacteriological laboratory of his native city. In 1903 he was appointed director of the Pasteur Institute at Tunis, where he devoted himself to the study of the infectious diseases of N. Africa. In the course of that work he discovered, in 1909, the fact that lice transmit the bacillus of typhus, a fact subsequently confirmed by Ricketts and Prowazek 1910 and 1913 respectively. For this and other contributions to the fight against epidemics he was awarded the Nobel prize for medicine in 1928.

**Nicol Prism.** Prism of Iceland spar, used as a source of plane-polarised light. If a parallel beam of light strikes obliquely on the surface of a rhombohedron of Iceland spar it is split into two parts. The refractive index for one ray (the ordinary ray) is a constant, viz. 1.658 for sodium-D lines, while for the other (the extraordinary ray) it varies between 1.486 and 1.658 according to the angle of incidence. Hence, except along the optic axis when both travel at the same speed, the extraordinary ray has a higher speed than the ordinary ray. The Nicol prism (named after William Nicol and invented in 1832) is a device used to separate the two rays so as to give a single beam of plane-polarised light. For this purpose a prism is sawn into two parts along a diagonal plane, perpendicular to the principal plane of one end face. The cut faces are cemented together with a thin transparent film of Canada balsam with refractive index (1.530) intermediate between those of the ordinary and extraordinary rays. With properly chosen crystal dimensions the ordinary ray strikes the balsam layer at an angle exceeding the critical and so is reflected towards the side of the crystal where it may be suitably absorbed.

**Nicolson, HAROLD** (b. 1886). British writer, diplomatist, and politician. Son of the 1st Baron Carnock, he was born at Teheran, Persia, Nov. 21, 1886, and educated at Wellington, and Balliol, Oxford. He entered the diplomatic service in 1909. A member of the British delegation to the peace conference, 1919, when he was closely associated with Curzon, he was later attached to the legation at Tehe-

ran, 1925, and to the embassy at Berlin, 1927. Retiring in 1929, he turned to journalism. Entering



Harold Nicolson,  
British writer

politics in 1931 as a member of the short-lived New Party, he represented W. Leicester as National Labour M.P., 1935-45, and was parliamentary secretary to the ministry of Information, 1940-41. In 1947 he joined the Labour party. A popular broadcaster, he was a governor of the B.B.C. 1941-46.

In his *Life of Lord Carnock*, 1930, he gave a brilliant exposition of the events and causes leading to the First Great War; and in *Peacemaking*, 1933, and *Lord Curzon: The Last Phase*, 1934, he examined with equal skill the tendencies of post-war diplomacy, the latter book giving as well a fine estimation of Curzon's character. His other works included *Lives of Verlaine*, 1921; *Tennyson*, 1923; *Swirburne*, 1926; and *Dwight Morrow*, 1935; *Some People*, 1927; *Small Talk*, 1937; *The Desire to Please*, 1943; *The Congress of Vienna*, 1946. For many years he contributed a weekly essay to *The Spectator*. He married Victoria Sackville-West (*q.v.*), with whom he collaborated in *Another World Than This* (anthology), 1945.

**Nicomedia.** Ancient city of Bithynia, Asia Minor, the modern Ismid. It stands at the N.E. end of the sea of Marmara, and was founded 264 B.C. by Nicomedes I of Bithynia. After the quadripartite division of the Roman empire by the emperor Diocletian it became the seat of the government of Diocletian himself. Hannibal committed suicide by poison in Nicomedia, and it was the birthplace of the historian Arrian.

**Nicosia** or **LEVKOSIA**. Capital of Cyprus. It stands in the centre of the island, 25 m. N.W. of the seaport Larnaca. It retains its high Venetian walls, and contains a fine Gothic edifice, once the cathedral of S. Sophia and now a mosque, and English and other churches. It is the see of a Greek archbishop and the seat of the British governor. Silk, leather, and woollen goods are manufactured. From the time of Constantine the Great until 1567 it was 9 m. in circumference, but the Venetians reduced it to 3 m. and fortified it, demolishing temples, palaces, and



Sir W. R. Nicoll,  
British journalist  
*Hoppe*

beautiful monuments. In 1570 it was taken by the Turks. Nicosia has one of the Middle East's chief airports. Pop. 34,463.

**Nicosia.** City of Sicily, in the prov. of Enna. Among the heights of Monte San Giovanni, at an alt. of 2,840 ft., 42 m. W.N.W. of Catania and 21 m. by road from the rly. station for Leonforte, it has a fine Norman cathedral and other churches, some damaged in the Second Great War. Sulphur springs are near by and salt is mined. A Lombard dialect is spoken. Destroyed by the Saracens, it was rebuilt by the Normans.

**Nicot, JEAN** (1530-1600). A French diplomat and philologist. Born at Nîmes, the son of a notary, he became a lawyer in Paris in 1554. Favoured by Henry II, he was ambassador to Lisbon in 1559, and there became acquainted with the properties of the plant later known as tobacco, and called in his honour *nicotiana*, which he introduced to Catherine de' Medici. Recalled in 1561, he spent his later years in philological work. He died in Paris, May 5, 1600. See *Nicotine*.

**Nicotiana.** Genus of herbaceous plants, of which the most important are the tobacco plants. See *Tobacco*.

**Nicotinamide** ( $C_{10}H_{14}ON_2$ ). Yellowish oil used in 25 p.c. solution as a respiratory stimulant. It may be administered orally or by injection. Nicotinamide is also used in the treatment of the vitamin B deficiency disease known as pellagra (*q.v.*).

**Nicotine.** Liquid alkaloid extracted from the leaves of *Nicotiana tabacum*, the tobacco plant. Colourless, with a strong, stupefying, irritating odour, it is soluble in water, alcohol, and ether, and turns brown on exposure to the air. Tobacco contains from 1 to 8 p.c. of the liquid. Pure nicotine is one of the most deadly poisons known, rapidly causing death by paralysing the cardiac and respiratory centres in the brain. Nicotine was probably the first insecticide employed in Great Britain, in the middle of the 18th century for controlling plant lice on neectarines. Nicotine for insecticidal use is made from waste tobacco. See *Tobacco*.

**Nicotinic Acid.** Part of the vitamin B complex, which helps to prevent pellagra (*q.v.*). It has none of the action of nicotine.

**Nicoya, GULF OF.** Inlet of the Pacific Ocean on the W. coast of Costa Rica, Central America. Protected W. by the peninsula of Nicoya, it penetrates inland about



Niederwald, Germany. Colossal statue of Germania, erected 1877-83, in the Niederwald to commemorate the founding of the German empire

50 m., its breadth varying between 20 m. and 30 m. The coasts are mountainous and picturesque. On the E. shore is Punta Arenas, the Pacific port of Costa Rica. The village of Nicoya is about 80 m. N.W. of San José.

**Niotheroy or NITEROI.** City of Brazil. The capital of the state of Rio de Janeiro, it is on the N. shore of the bay of Rio de Janeiro. In one of its suburbs is a popular sea-bathing station, Icaraty. Flannel, felt, soap, spirits, and tobacco are manufactured. Pop. est. 143,000.

**Nictitating Membrane or THIRD EYELID.** Thin membrane at the side of the eye, which can be drawn rapidly across the cornea to clean the surface of the eye. It is best developed in the birds, but can also be observed in the reptiles and in some batrachians. In mammals generally it is but slightly developed, and it is rudimentary in man. See *Eye*.

**Nidd.** River of the W. Riding of Yorkshire, England. It rises on Great Whernside, and flows E., S.E., and N.E. through Nidderdale, past Pateley Bridge, Ripley, and Knaresborough to the Ouse, 8 m. above York. It is dammed above Pateley Bridge, and thus provides water for Bradford.

**Niedersachsen** (Ger., Lower Saxony). Region of Germany. Originally Niedersachsen embraced a wide area centred on Hanover, and taking in a large proportion of the Dutch, N. German, Pomeranian, and Thuringian pop. As such it was one of the ten *Kreise* of the Holy Roman Empire. The name was revived after the Second Great War and applied to a homo-

geneous area within the British zone of occupation; this was constituted a *Land* in 1946 (see Lower Saxony). Except for Hanover (*q.v.*), its capital, the towns of the region were less damaged by the war than those of surrounding areas. Economically the area is well balanced, numbers in agriculture and in trade and industry being about equal.

**Niederwald.** Mt. ridge of Germany. It forms the W. end of the Taunus at the upper end of the great gorge of the Rhine. Dominating the outlook from the river is the colossal statue, Germania, erected 1877-83 to commemorate the founding of the empire in 1871. S. is the Rheingau, famed for its mineral springs and vineyards.

**Niello** (Ital. from late Lat. *nigellum*, black enamel). Inlaying gold, silver, and bronze with a black metallic alloy of silver, copper, and lead, to which, when molten, there is added powdered sulphur. Since this alloy appears in the inlay as a deep black, silver has been the chief base on which the art has been practised, giving the greatest contrast between inlay and base.

The earliest extant example of the art is a 1st century bronze statue of a Roman general, in the British Museum. There are fine examples also in the church of the royal palace at Hanover; in S. Sophia, Istanbul; and in many churches in Italy and Russia. The art has been popular in India for many centuries. It is said that niello first suggested the method of printing from engraved metal plates. Certainly prints are in existence in the British and other museums of a niello portrait of the Virgin made in 1452, and now in the Opera del Duomo, Florence.

**Niemen, NYEMAN, or MEMEL.** River of the U.S.S.R. Its head-streams rise W. of Minsk, in White Russia S.S.R., and it flows generally W. to Grodno, then crosses into Lithuania S.S.R. to flow N. and W. past Kaunas. It enters the Kurisches Haff, an arm of the Baltic, S. of Memel, after a course of 550 m. The area of its basin is approx. 35,000 sq. m. Except for occasional obstructions, one being the Devil's Dam above Kaunas, navigation is practicable to Grodno. On a raft in the Niemen, Napoleon and Alexander I signed the treaty of Tilsit, July 7, 1807. In the First Great War the Russians withdrew to the Niemen after their defeat at Tannenberg, Aug., 1914, and in Feb., 1915, they were driven back to it again.

**Niemöller, MARTIN** (b. 1892). German ecclesiastic. Formerly a naval lieutenant and commander of a U-boat in the First Great War, he became a pastor in the Evangelical Church at Dahlem, Berlin. In 1933 he led a league of clergymen in their campaign against the appointment of Bishop Müller. Dismissed next year by the Nazis, he refused to retire, and continued to defy their attempts to subordinate the church to the state. When in 1937 a hundred Protestant clergymen were arrested, Niemöller was kept in custody. In



Martin Niemöller,  
German ecclesiastic

March, 1938, he was sentenced to seven months' imprisonment, and was in Sachsenhausen concentration camp until released by the Allies in May, 1945. He was regarded as a martyr, but in 1947 a tribunal found that he had offered a degree of support to Hitler, and he was deprived of his status as a Nazi victim.

**Niepee, JOSEPH NICÉPHORE** (1765-1833). French physicist. Born at Chalon-sur-Saône, March 7, 1765, he was commissioned in the army in 1783 and during 1795-1801 was administrator of Nice. Retiring from the army, he joined his brother Claude (1763-1828) in mechanical and chemical experiments. The idea of obtaining photographs first suggested itself in 1813, and in 1827 Niepee succeeded in producing one on a metal plate, and was the first to evolve a photographic process in which the picture was unaffected by exposure to light. From 1829 he associated himself with Daguerre (*q.v.*). He died at Gras, July 3, 1833.

**Nierembergia.** Genus of perennial herbs of the family Solanaceae, natives of S. America. The stems as a rule are more or less procumbent, or even prostrate. The tubular flowers vary from a pale tint of violet to blue or white. Several species are cultivated, of which *N. frutescens* is shrubby, with slender leaves and pale blue flowers. *N. gracilis* is a downy plant with narrow leaves and white flowers, with yellow tube. *N. rivularis* has matted, creeping stems and spoon-shaped leaves; the flowers are white, tinged with yellow or rose.

**Nietzsche, FRIEDRICH** (1844-1900). German philosopher. Born at Rocken, in Prussian Saxony,

Oct. 15, 1844, son of a pastor of remote Polish extraction, he was educated at Naumburg grammar school, at the famous school of Pforta, and at Bonn and Leipzig universities. After a year's compulsory service in the artillery, he returned in 1868 to Leipzig, obtained his degree, and at 25 was professor of classical philology at Basel. Here he lectured with success until in 1879 ill-health compelled him to resign. The university granted him a pension of £120 a year, and with this and small private resources he lived mostly in Italy and Switzerland, until an apoplectic fit in 1888 was followed by insanity. He died in his sister's house at Weimar on Aug. 25, 1900.

He early became more attentive to the nature of the Greek genius than to the technicalities of Greek literature. He concluded, in *The Birth of Tragedy*, 1872, that the original genius of Greece, and the proper idea of mankind, was an instinctive and joyous creativeness—the Dionysiac element—which was later ruined by intellectualism and fixed moral rules—the Apollinist element.

Essentially a poet, Nietzsche never framed a philosophy, or systematically arranged his reflections on life, but his early ideal steadily developed. Against the prevailing intellectualism he passionately pleaded for strength, will, impulse. He knew little of science, and when Darwinism spread, he superficially acclaimed it as the gospel of eternal struggle, of the triumph of the strong.

He heatedly attacked pity and humanitarianism, and, on the ground that it had introduced



Friedrich Nietzsche,  
German philosopher

these things into Europe, bitterly assailed Christianity. Few understood or appreciated his works, and he imagined a group of "free spirits," sharing his ideas, who might one day exist. These become, in his writings, the Beyond-Men or Supermen. The code of morals of these "master spirits" must differ from the prevailing "slave-morality," and his later works were almost entirely devoted to a "transvaluation of values," or a reconsideration of moral standards. These are the main ideas of his chief works, *Human, All-Too Human*, 1876-80; *The Joyous Wisdom*, 1882; *Thus Spake Zarathustra*, 1883-84; *Beyond Good and Evil*, 1886; *Genealogy of Morals*, 1887.

His lyrical praise of struggle, and ultimately of war, and his scorn of humanitarianism and morality were powerful influences in Germany. *Pron.* Neetch-uh.

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**Nieuport** (Flemish *Nieuwpoort*). Town of Belgium, in the prov. of W. Flanders. It lies on the Yser, 10 m. S.W. of Ostend, and is connected by rly. with Dixmude and by canal with Furnes. Some fishing is carried on. Nieuport-Bains, 2½ m. N., is a small watering-place in the dunes at the mouth of the Yser.

Originally known as Santhoven, Nieuport was a trading centre of note in the Middle Ages, and was unsuccessfully besieged by the French, 1489. The Spaniards were defeated here in the battle of the Dunes by Maurice of Nassau, 1600. During the First Great War the town was completely ruined, losing its hôtel de ville, 15th century cloth hall, 12th-15th century church of Notre Dame, and Templars' Tower. At the extreme N. of the Western front and an important point in the battle of the Yser, Oct., 1914, it was held by French troops after the Belgians were withdrawn, and in the summer of 1917 by the British 4th army. After the war the buildings were restored in their original styles. During the evacuation of Dunkirk in 1940 by



Nierembergia. Flowers and foliage  
of *N. rivularis*



the B.E.F. Nieuport was included in the perimeter defences. It was then occupied by the Germans until liberated by the 1st Canadian army on Sept. 8, 1944.

**Nieuwveld.** Mt. range in the Cape prov., S. Africa. Running W. to E. south of the Great Karroo, the mts. form an escarpment joined through the Stormbergen and Sneeuwbergen with the Drakensbergen, and are the edge of the great African plateau.

**Nièvre.** Dept. of France. In the centre of the country, its area is 2,658 sq. m. It includes the mountainous district of Morvan in the E., and less elevated regions in the N., while in the W. the dept. is flat. The chief rivers are the Loire, Nièvre, Allier, Aron, Cure, and Yonne. An agricultural, but not very fertile, district, it produces some cereals and potatoes; cattle and sheep are reared in large numbers. There are some vineyards and much of the land is forest. There are coal and iron mines in the dept. and some large ironworks. Nevers is the capital; other places are Château Chignon, Clamecy, Cosne, and Fourchambault. Before the Revolution most of Nièvre was covered by the province of Nivernais. Pop. 248,559.

**Nigella.** Genus of annual herbs of the family Ranunculaceae, natives of the Mediterranean region. Popularly known as Love-in-a-mist and Devil-in-a-bush, they bear variously coloured blue, white, and yellow flowers surrounded by graceful feathery foliage.

**Niger.** Territory of French West Africa, lying to the S. of the Sahara, with French Sudan on the W., Chad territory on the E., and British Nigeria to the S. Desert in the N., it is well wooded cattle country in the S., its chief crop being ground nuts. Big game abounds. The capital is Niamey. Area 499,410 sq. m. Pop. 2,000,000 natives; 1,000 whites.

**Niger.** A river of W. Africa. It rises in the mountainous zone on the frontiers of Sierra Leone and French Guinea, near Timbukunda. After a devious course of some 2,500 m., during which it passes through French territory and N. Nigeria, it enters S. Nigeria at Idah, and falls into the Gulf of Guinea through a large estuary in the central portion of the coast of S. Nigeria. From its source the main river flows N.E. to its junction with the Milo, and continuing in the same general direction, reaches the neighbourhood of Timbuktu, whence the direction

is mainly E. almost to long. 0°. From this point it flows generally S.E. to the sea. The principal tributaries are the Milo, Bakhoy, Sokoto, Kaduna, and Benue. The delta begins near Abo, about 80 m. from the sea, and has numerous mouths, the chief being the Nun, Forcados, and Bonny.

The headwaters are connected with the coast by the French rly. from Kankan, on the Milo branch, to Kurussa, on the main river; and across French Guinea to the port of Konakry; and by the rly. from Kulikoro to Bamako, thence to Kayes and Dakar. The river is navigable between Kurussa and Bamako, and for a short distance above the latter place. It is again navigable from Kulikoro and Ansongo by small launches, and under favourable circumstances as far as Niamey. In Nigeria the river is divided into two navigable sections, broken by the rapids N. of Jebba, although above Sekachi it is navigable as far as Gaya in French territory and with intervals up to Ansongo. The lower river suits small ocean-going vessels as far as Baro, but navigation is increasingly difficult.

Although known to the Greeks and mentioned by Ptolemy and later writers, the Niger generally was supposed to run W. instead of E., and is so marked on many of the old maps. In 1795 Mungo Park, under the auspices of the African Association, was sent to explore its sources, and travelled along the river from the Gambia estuary to Segu. In 1805 he again reached the Niger, but was killed near Bussa, when crossing the rapids beyond that place.

In 1822 Hugh Clapperton and Dixon Denham started from Tripoli and reached Bornu and the country N. of the Niger. During another expedition in 1825 Clapperton died at Sokoto, but his companion, Richard Lander, again explored the lower Niger and determined its exact course. Other expeditions followed, notably those under Macgregor Laird in 1832, Lander in 1834, Richardson and Barth, who crossed from Tripoli, Zweifel, and Moustier, in 1879, and Brouet, who in 1885 discovered the Timbi source.

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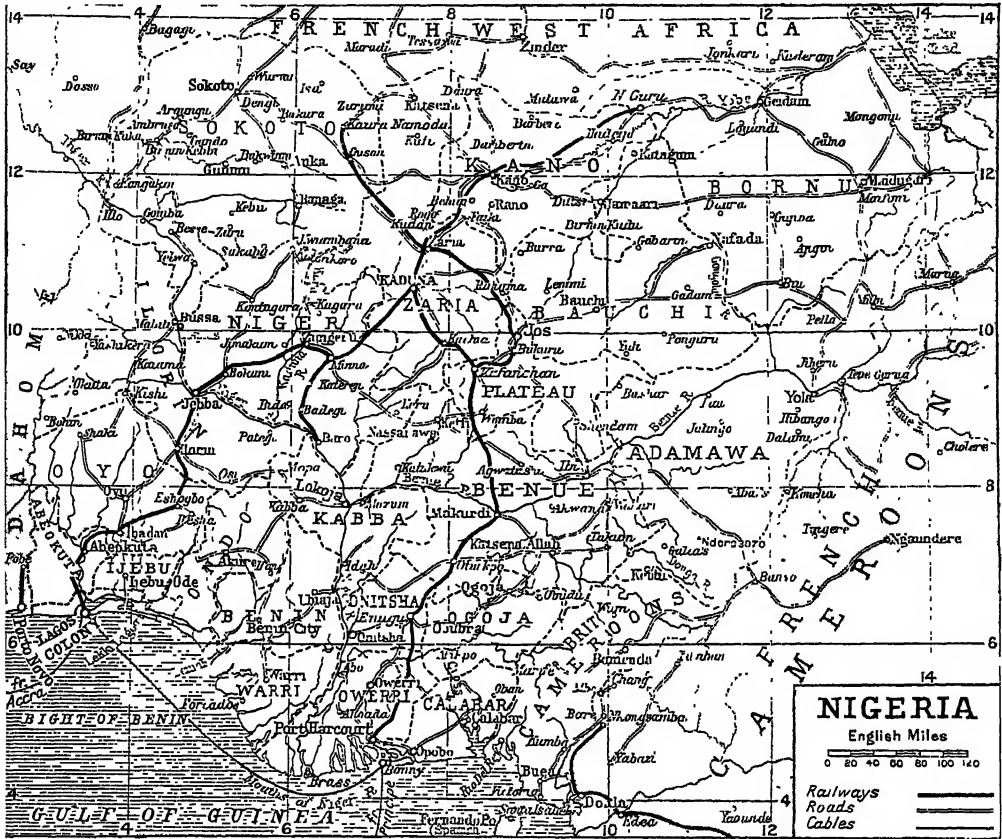
**Nigeria.** British colony and protectorate in W. Africa. British influence began around Lagos,

which was bought from a native chief in 1861, and achieved a separate existence in 1886 as the colony and protectorate of Lagos. That year the National African Co., which had commenced operations in the Niger valley, became the Royal Niger Co.; its activities continued for 13 years, and it surrendered its charter in 1899. Two protectorates of N. and S. Nigeria were inaugurated on Jan. 1, 1900. In 1885 the protectorate of the Oil, i.e. palm oil, rivers had been established; this became the Niger Coast protectorate in 1893, and in 1900 was absorbed by S. Nigeria. In 1906 S. Nigeria and Lagos were joined, and in 1914 the colony and protectorate of S. Nigeria was combined with N. Nigeria to form the existing colony. A strip of German Cameroons was administered under mandate from 1919. Lagos is the capital.

The territory is under a governor, who is assisted by an executive council consisting of a few senior officials and three additional members, and by a legislative council, remodelled in 1947 to consist of ex officio, nominated, nominated but unofficial, and elected members; of the 45 members, 25 are Africans. Various groups of provinces have each a house of assembly. Altogether there are 23 provinces, each under a resident. There are a supreme court and eight judicial divisions.

The lower Niger and its great tributary, the Benue, divide the country into three parts: the wide land N. of both rivers on the low plateau of N. Africa with the central heights attaining 3,000 ft. over a wide area; the S.W. corner bounded by the Niger, the sea, and Dahomé, where are the Yoruba Highlands; and the S.E. corner, much lower except in the area detached from Cameroons. The Lagos coast was once known as the Slave Coast, but in 1917 slavery was abolished as a legal status; slave dealing had ceased, and the slave markets were suppressed by the native rulers. The trade lasted longest in the N., on the edge of the Sahara, where the Mahomedan Hausas and Fulas long retained the system of domestic slavery. In religion the people are more animists or Christians than Muslims.

The S. is tropical forest as far inland as Ibadan; the rest is savanna. Rainfall is heavy during summer, reaching an annual average of 151 ins. at Bonny. The S. yields palm oil and kernels,



Nigeria. Map of the British West African protectorate traversed by the rivers Niger and Benue, and one of the most densely populated parts of Africa

rubber, ground-nuts, hides, coffee, cocoa, kola nuts, etc.; in the N. is the tin-mining area. Coal is mined at Udi. Deposits of silver, galena, manganese ore, and monazite have been found, and during the Second Great War the mining of columbite was developed. Trade passes seawards by many ports, of which the chief are Lagos, Port Harcourt, Bonny, and Calabar; it concentrates from the French territory to the N., W., and E. on Kano, long a famous caravan centre, and now the railhead for Lagos. There are about 2,340 m. of rly., while 48,275 m. of roads are planned. Nigeria's area is approx. 372,674 sq. m. Pop. 21,826,389, denser than any other part of Africa except the Nile valley.

Nigerian troops to the number of 96,000 fought in the Second Great War, in E. Africa and Burma; but the colony's principal war contribution was increased production of foodstuffs, minerals, especially tin, and rubber. Capital expenditure was provided

by the Colonial Development and Welfare Act of 1940; conscription of labour was introduced, but was discontinued in 1944. In 1946 a development plan was adopted, covering schemes for improved water supplies, telecommunications, waterways, and health and education services, and wide extensions in forestry, cattle-raising, and agriculture. Of the estimated cost of £55,000,000, grants provided £23,000,000, while £17,000,000 was raised by loans.

Leprosy is an important problem in Nigeria, where there are over 400,000 known lepers. Experimentation carried out here was responsible for the development of a new drug (D.A.D.P.S.) now in use throughout the world (see Leprosy). See also Abeokuta; Bauchi; Benue; Lagos; Niger.

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**Night.** Interval between sunset and sunrise. Its length varies according to the seasons and the latitude. At the equinoxes it is twelve hours in length on every part of the earth, lengthening afterwards in one hemisphere and shortening in the other until the solstices. At the poles the period of night lasts six months.

**Night Blindness.** For this condition see Blindness.

**Night Club.** Place of entertainment open after the closing of normal licensed premises, for members and their invited guests only. Food and alcoholic drinks are available, and there is generally a band for dancing and a cabaret show. The first night clubs were opened in London in 1919 to provide entertainment on the lines of Paris cabarets without contravening the licensing laws; they spread to the U.S.A., but American clubs were not restricted to members, and the term there became synonymous with cabaret. Most London night clubs are

conducted on the "bottle-party" system, whereby a member orders in advance a whole bottle of liquor from a wine-merchant, and has it stored at the club and produced on request.

During the Second Great War chief officers of police were given power to close clubs where there was drunkenness or disorderly conduct, or to limit the hours of opening if the club was frequented by war workers.

**Night Fighter.** Type of aircraft developed by the R.A.F. in the Second Great War to combat night air attacks. Unlike the day fighter, which is generally a single-seater, the night fighter carries a pilot and navigator. The first British example was the Boulton-Paul Defiant, which was equipped with a power-operated gun-turret and, after service as a day fighter in the battle of Britain, went into action at night early in 1941. These aircraft at first had to rely upon ground searchlights picking up and illuminating enemy bombers, but later were themselves fitted with searchlights. With radar they could track down and attack bombers unseen. Eventually twin-engined night fighters, Beaufighters and Mosquitos, were introduced, their range, armament, and speed making night bombing too costly for the Germans, whose lack of efficient night fighters was one reason for the success of the R.A.F. in bombing German cities by night. See Air Defence; Fighter; Radar.

**Night Heron** (*Nycticorax nycticorax*). Species of small heron, common on the Continent of Europe and widely distributed in the Eastern hemisphere. About two ft. long, with greenish plumage on the back, purple breast, and long white plumes at the back of the head, it commonly nests in colonies in low trees, is usually found in swampy woods, and is most active at night. It is doubtful if it ever bred in Great Britain, which it visits in the spring and autumn. The name is given in America to another species, *N. naevius*. See Boatbill; Heron.

**Nightingale** (*Luscinia megarhynchos*). Bird of the thrush family, famous for its sustained and varied

song, indulged in far into the night as well as by day. A native of Europe from England to its eastern borders and into Asia Minor, and from Copenhagen to N.W. Africa, its length slightly exceeds 6 ins. Its upper parts are russet brown and the underside is brownish white.

Arriving in England in mid-April, the bird ranges only as far N. as S. Yorkshire, and as far W. as the valley of the Exe. It visits parts of S. Wales, but not Ireland.

The nest, composed of dead leaves and grass, is placed on or near the ground in the tangled vegetation of copse or hedgerow, and contains four or five olive-tinted, polished eggs. While the hen is sitting the cock frequently sits on a branch above and pours out his rich song, undeterred by the presence of an appreciative human listener only a few feet away. The nightingale feeds chiefly on the ground, consuming worms and various insects, and later the wild berries. The song is not heard much after mid-June; but the soft *wheel* call-note and the alarm *kur*, *kur* denote its presence until it departs in Aug. or Sept.

The Eastern or thrush-nightingale (*L. luscinia*), of Europe E. of the Rhine, is somewhat larger, with the breast spotted faintly; and the Persian nightingale (*L. hafizi*) occurs farther E. from the Caucasus through Persia to Sinkiang and occasionally to India.

The nightingale figures in the mythologic story of Tereus and Philomela, the latter being transformed into the bird, whose plaintive song is supposed to be a recital of her wrongs. It inspired Keats to the most celebrated ode in the English language. The name is derived from A.S. *nihtegale*, meaning singer of the night. See Eggs colour plate.

**Nightingale, FLORENCE** (1820-1910). British reformer. Born at Florence, Italy, May 12, 1820, she was the younger daughter of W. E. Nightingale, a moneyed, cultured, well-connected man. Her maternal grandfather, William Smith, was a strong advocate of

the abolition of slavery. Florence spent her early life in the family homes first at Lea Hall, Derbyshire, then (from 1825) at Lea Hurst, Derbyshire, in summer, and Embley Park, Hants, in winter. She was brought up to the life of visiting, entertaining, and casual philanthropy then customary for young

ladies of leisured family, but in addition received a wide education not usual at that day. In 1845 she planned to become a nurse at Salisbury Hospital, and then to set up a sort of "Protestant sisterhood, without vows, for



Nightingale. Male specimen of the European song-bird



Florence Nightingale  
Augustus L. Egg, National Portrait Gallery, London

women of educated feelings." But these plans came to nothing. Attended by a manservant, however, she was allowed to visit ragged schools, and during travels on the Continent visited hospitals in Rome and Paris, and contrived in 1851 to take a three months' training as a sick nurse at the institute of Protestant deaconesses at Kaiserswerth on the Rhine.

During the next year she wrote her *Suggestions for Thought to Searchers after Religious Truth*, amplified and printed (but never published) in 1859. In it she set down her own struggle to reach a philosophy through religion, and a poignant record of the frustration suffered by a woman of energy and active mind in her day. The Crimean war broke out in March, 1854, and the reports sent home by war correspondents of the neglect of the wounded and of the need of devoted women



Night Heron. Example of the European species

W. S. Berridge, F.Z.S.

to nurse them led her on Oct. 14 to offer her services to the War office. On the same day her friend Sidney Herbert, then secretary for War, wrote asking her if she would go out and supervise a nursing service. She acted immediately, chose her company, and on Oct. 21 sailed for the Crimea taking with her 38 nurses. She reached Soutari on Nov. 4, and found the barracks hospital dismal and dirty. There were no stores, no utensils, no soap, no towels, no hospital clothing. The sick and wounded lay in their uniforms, filthy and verminous.

Florence Nightingale's arrival was not welcomed; but with an outlet at last for her energy and organizing ability she set to work and by Dec., when 46 more nurses came out, she had produced some sort of order. It was said that she was on her feet 20 hours in the day; she allowed no woman but herself to be on duty at night, when the place of the other nurses was taken by orderlies. It was those night vigils that earned her the name the Lady of the Lamp. Defects of sanitation remained, and only after the death rate from cholera, typhus, and dysentery had risen in Feb., 1855, to 42 p.c. of cases in hospital was she able to persuade the War office to insist on reform. This brought the death rate down by June to two p.c. Then she made a tour of the hospitals about Balaclava. She remained in the Crimea until Aug., 1856, and returned to England to find herself a popular heroine. She asked that the recognition of her work should be the setting up of a school of nursing; £50,000 was collected, and the Nightingale school and home for nurses was established at S. Thomas's hospital, 1860.

The strain of her Crimea service had affected her health and she was henceforth a semi-invalid; but from her home in London she continued to write and advise, with the authority born of her experience, on all aspects of nursing and sanitation. In 1907 she received the O.M., the first woman to be thus honoured. She died at her home Aug. 13, 1910. Her notes on nursing, first published in 1858, were issued in a revised edition, *The Art of Nursing*, 1947. See *Nursing*. Consult also *Lives*, S. I. Tooley, 1905; E. T. Cook, 1913; G. C. Willis, 1931; *Eminent Victorians*, L. Strachey, 1918.

Irene Clephane

**Nightjar** (*Caprimulgus europaeus*). Migratory bird common in Great Britain during the



Nightjar. Specimen of this insectivorous bird, on the wing

summer, and spending the winter in Africa as far S. as the Cape. In shape it resembles a large swift, with a large, flat head and a wide, gaping mouth. It is called nightjar from its peculiar whirring cry, but flies silently by night in search of insects. The term goatsucker perpetuates an ancient and widespread delusion, due to its habit of hawking for flies round the udders of animals. The bird is about 10 ins. long, and its colour is grey, spotted and barred with yellow and brown. It lays two beautifully marbled eggs on the bare ground, usually close to a small bush or tuft of heather. The nightjar family includes many genera and about 90 species, including the N. American whip-poor-will. See *Eggs*, colour plate.

**Nightmare.** Dream accompanied by feelings of terror. Anciently supposed to be caused by an evil spirit, it was until recently believed to be due to digestive disorder. The newer theory of dreams regards this as only a precipitating cause, and ascribes nightmare to psychological processes. It is believed that certain primitive wishes in the subconscious mind are forcing themselves into the consciousness, and if they are not sufficiently disguised to produce the ordinary form of dream, but are likely to become clear to the sleeper, he awakes in a state of terror. See *Dream*.

**Nightriders.** Name given to terrorists in Kentucky, U.S.A., who in 1908 made destructive raids on the tobacco-growing fields. They were planters who had refused to come into a scheme for pooling crops so as to get the best possible price. In clashes

between the Nightriders and growers inside the organization, some lives were lost, and only about one-fifteenth of the normal crop was grown next year.

**Nightshade.** Folk-name for several species of plants. Woody nightshade or bittersweet is *Solanum dulcamara*, and common nightshade is *S. nigrum*, while enchanter's nightshade is *Circea luteiflora*. Deadly nightshade (*Atropa belladonna*) is a perennial herb of the family Solanaceae, a native of Europe and N. Africa. Several annual stems proceed from the same fleshy rootstock, and form a bush 3 or 4 ft. high, with large oval leaves. The large, solitary, bell-shaped flowers are dull purple



Nightshade. *Atropa belladonna*, or deadly nightshade

in colour, and droop on short stalks. The fruit is a large, shining black, globular berry. The whole plant is poisonous and smells unpleasantly. Hyoscyamine and atropine are obtained from the rootstock lifted in autumn, and from fresh leaves gathered when the plant is in flower.

**Nigri Sembilan** (nine states).

Collective name of a group of states in the Malay Peninsula, formerly one of the Federated Malay States and now a part of the federation of Malaya (q.v.).

Nigri Sembilan came under British rule 1873, and comprised the states of Sungai Ujong, Sri Menanti, Jelebu, Rembau, Johol, and Tampin. It entered the F.M.S. 1895. Area approx. 2,550 sq. m.; estimated pop. 296,000. It lies in the S.W. of the peninsula. The surface is mountainous in the interior, rising in Gunong Ledang, or Mt. Ophir, to 3,845 ft. The chief harbours are Port Dickson and Linggi. The valleys are fertile and the hill slopes heavily timbered, the principal products being timber, rice, rubber, spices, tapioca, and coffee. Tin, gold, and other minerals are mined. Seramban is the chief town.

**Nigrosine.** Black dye closely related to induline (a blue-black dye). By various modifications a long series of blue to black dyes soluble in spirit is produced. By sulphonation they are converted to water-soluble forms and find varied use in industry. Nigrosine is put into spirit stains and varnishes and in polishes. Used

in dyeing silk and in calico printing, it gives grey or blue-grey shades. *See* Dyes.

**Nihilism** (Lat. *nihil*, nothing). Name given to the tenets of the Russian revolutionary socialists. Though there had been for forty years parties holding similar views in Russia, it was due to Turgenev, in 1862, that the term nihilism came to be used. The attitude of mind was the result of the terrible conditions of living of the vast mass of the Russian people, and the main object of those who held it was the overthrow of government by force of any kind. The nihilists aimed at freedom of the press, freedom of speech, religious equality, equality of treatment for women, the land for the people, etc.

The nihilist movement began to become a force in 1860-70, and owing to its violent methods wholesale arrests were carried out during the next decade, some 4,000 people being tried in Russia in 1877-78 alone. In the latter year an attempt was made to assassinate Gen. Trepov; Gen. Mezentsev was killed in St. Petersburg; and in 1879 Prince Kropotkin was assassinated, and attempts were made to kill the tsar, Alexander II. His assassination in 1881 was followed by methods of extreme severity against the nihilists, who were gradually crushed, and new organizations came into existence which hoped to achieve the aims of nihilism by more constitutional means. *See* Anarchism. *Consult* *Memoirs of a Revolutionist*, P. A. Kropotkin, 1899.

**Niigata.** Seaport of Japan, on the W. coast of Honshu. It is the capital of Niigata prefecture and is near the mouth of the Shinanogawa. Its harbour is shallow, silts up with river alluvium, and is exposed to N. winds. Dredging operations have made some improvement. The trade is almost limited to traffic with Vladivostok and other Siberian harbours. Exports are mainly rice and soya beans, which are grown extensively in the prefecture. There are ironworks and chemical manufactures. The town is intersected by many canals. It is connected by rly. with other W. coast ports, Tokyo and Osaka, and is the port for the island of Sado, 32 m. away. Pop. 72,000.

**Nijinsky, VASLAV** (1890-1950). Russian dancer. Born at Kiev, Feb. 28, 1890, he was trained at the Imperial ballet school of St. Petersburg, and made his debut at the Marinsky theatre, 1907.

Two years later he went with Diaghilev to Paris, achieving spectacular success in Scheherazade. Matchless technique, dramatic ability, and an unusual ability to jump (he

was probably alone in being able to perform ten entrechats) made him the greatest male dancer of his age. As partner of Karavina in *Le Spectre de la Rose* he was outstanding. At

Covent Garden in 1911 he gave brilliant performances in *Petrouchka* and *Carnaval*. He was also the choreographer of *L'Après-midi d'un Faune*, 1912, and *Le Sacre du Printemps*, 1913; and during his last years evolved a system of choreographic notation.

After quarrelling with Diaghilev he formed his own company in 1913. He was interned in Austria in 1914, his release being secured by Diaghilev whose company he rejoined in the U.S.A. in 1916. Symptoms of mental disorder appeared, however, and after 1918 he never danced again. He lived in a Swiss sanatorium for 20 years, then in Budapest, Vienna, the U.S.A., and from 1947 in England, where he died April 8, 1950.

**Nijmegen, NIMEGUEN, OR NYMEWEGEN.** Town of the Netherlands, in the prov. of Gelderland. It lies on the left bank of the Waal, 10½ m. by rly. S. of Arnhem, and is a rly. junction. The suburb of Lent is on the right bank. Industries include brewing and the manufacture of leather and tobacco.



Vaslav Nijinsky,  
Russian dancer

The rly. stn. was severely damaged, and several acres of the town near the station were flattened, in the Allied air attack that preceded the airborne landing (*v.i.*) of Sept., 1944. The great church, dedicated to S. Stephen, a Gothic building, was begun c. 1270, with work of the 14th and 15th centuries. The town hall, in the Renaissance style of the 16th century, restored in 1882, contained a museum of antiquities. There is an R.C. university. Population 103,609.

Nijmegen was known to the Romans as *Noviomagus*, and was a seat of the Carolingian, Franconian, and Hohenstaufen emperors. A free town of the Empire, it joined the Hanseatic League, and in 1579 the union of Utrecht. Held by the Spaniards, 1585-91, it was taken by Turenne in 1672.

In German occupation from May, 1940, Nijmegen was one of three places at which Allied airborne troops were dropped on Sept. 17, 1944, in the attempt to cross the Lower Rhine. Armoured units of the British 2nd army came up, and with the assistance of U.S. parachutists, who crossed the Waal in rubber boats under withering fire, secured the 600-yd. road bridge, Sept. 20, after a fierce 24-hr. battle, in time to remove the enemy's demolition charges. An attempt by German underwater swimmers to blow up both the road and the railway bridges on the night of Sept. 28-29 was frustrated. *See* Arnhem.

**Nijmegen, TREATY OF.** Peace that ended the war between France and a coalition formed by the Empire, Spain, and the Dutch Republic. France and Holland



Nijmegen. Air view of this Netherlands town showing the railway bridge (top), the harbour, and the road bridge over the river Waal



signed on August 11, 1678, and the others later, the final arrangement being made in 1679. France received Franche Comté and the control of Lorraine, and some of the fortresses of the Netherlands, while to her ally, Sweden, were returned territories in Germany taken from her during the war. This treaty marked the height of Louis XIV's power.

**Nijni Novgorod.** This is the old name of the sixth city of Russia, now Gorky (*q.v.*).

**Nijni Tagil.** Industrial town in the Ural Mts., Sverdlovsk prov., R.S.F.S.R. Developed under the Soviet five-year plans, it has rly. workshops, steel, armament, and machine tool factories, and chemical plants. Besides consuming local coal, it imports supplies by rly. from Karaganda and the Kuzbass. It lies about 140 m. E. of Perm. Pop. 159,864.

**Nikē.** In Greek mythology, the goddess of Victory. By the Romans she was called Victoria. She was the daughter of the giant Pallas, and was elevated to Olympus by Zeus because, with her sisters, she was the first to assist him in his battle with the Titans. In art, Nikē is represented as a winged figure with a palm or a wreath, and in Roman times with a shield. She is often represented as guiding the horses of conquering heroes.

**Nikisch, ARTHUR** (1855-1922). Hungarian musician. Born at Szent-Miklos, Oct. 12, 1855, he studied music as a child in Vienna, where he became a violinist in the imperial orchestra until appointed conductor at the Leipzig theatre. He conducted the symphony orchestra at Boston, 1889-93, orchestras at Budapest, Hamburg, and Berlin, and the Gewandhaus concerts at Leipzig. He died Jan. 23, 1922.

**Nikko.** Religious centre of Japan, in Honshu. It is almost due N. and 91 m. by rly. from Tokyo, the terminus of a branch line near the Daiyagawa, an affluent of the Kinugawa. N.E. to S.W. lies the Nikko range with peaks between 5,000 and 8,000 ft. alt. The district is chiefly celebrated for its lovely scenery, the tombs of Shogun emperors, and numerous temples.

**Nikolaev.** Fortress and commercial seaport of Ukraine S.S.R. It is 40 m. N.W. of Kherson and has rly. connexion with Kharkov. Here unite the rivers Ingul and Bug, flowing into the Dnieper estuary. Formerly the headquarters of the Black Sea fleet, Nikolaev has numerous shipyards. Russian troops evacuated it after blowing up docks, Aug. 17, 1941, and it was in German hands until retaken by the 3rd Ukrainian army, March 28, 1944. Population, 167,108.



Nikē. The Winged Victory (Nikē. Apteros), found at Samothrace, now in the Louvre, Paris

**Nikolaistad.** Russian name of the seaport on the W. coast of Finland now called Vasa (*q.v.*) or Vaasa.

**Nikopol.** Town of Ukraine S.S.R. It lies at the S. end of the great bend of the Dniepor, about 160 m. from the mouth, and is a rich source of manganese. Occupied by German forces in Sept., 1941, it was recaptured by the 3rd Ukrainian army, Feb. 8, 1944. By the end of 1946 the manganese mines had been completely restored. Population, prev. 57,841.

**Nikopolis** (Gr., city of victory). Name of several ancient cities, of which the most important were: (1) In Epirus, situated on a strip of land opposite Actium, in the Ambracian gulf. It was founded by Augustus to celebrate his victory over Antony, Sept. 2, 31 B.C., which made him the master of the Roman world. Games were held here every four years in honour of Apollo, to whom a magnificent temple was erected. (2) In Lower Egypt, on the canal leading from Canopus to Alexandria. Also

founded by Augustus, it commemorated the final defeat of Antony and Cleopatra. (3) In lesser Armenia, on the Lycus, built by Pompey in honour of his victory over Mithradates, 65 B.C.

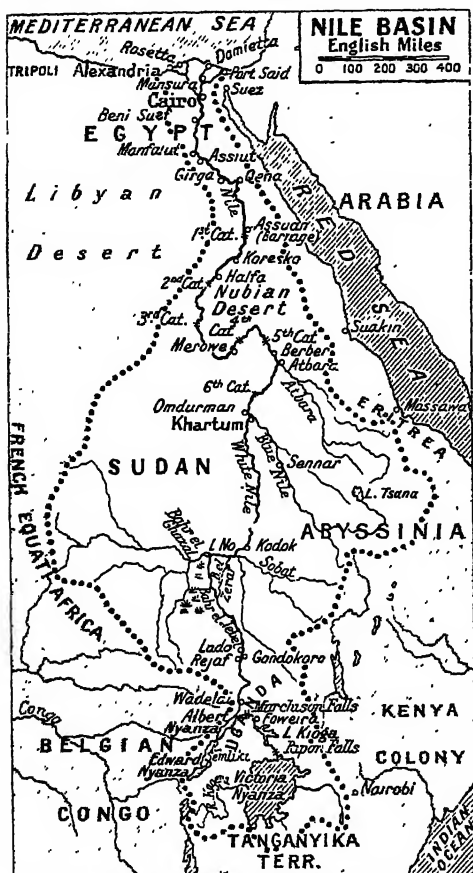
**Nikopolis** or NIKOPOLI. River port of Bulgaria. It is situated on the S. side of the Danube, about 25 m. N.E. of Plevna, with which it is connected by rly., and is linked by ferry with a rly. on the N. side of the river which connects with the Rumanian rly. system. In a fertile country, famous for its wine, Nikopolis has a citadel, an ancient castle, and a Byzantine church. Here the Turks defeated Sigismund of Hungary in 1396, in a battle at which the future Henry IV of England is said to have been present; and the Russians defeated the Turks in 1829. The town was damaged in the 1877 Russo-Turkish War. Pop. 4,963.

**Nile.** River of Africa. Though it was venerated by the Egyptians as the cause of their prosperity, its sources remained unknown until the discoveries of Speke in 1858 and Baker in 1860 revealed its great reservoir-lakes Victoria and Albert. The ancients had little knowledge of the river above Meroë (*q.v.*), and no knowledge of the causes of the annual inundations of the Lower Nile. Herodotus and other writers discuss this problem, without arriving at its solution. Ptolemy later speaks of two streams issuing from two lakes and afterwards uniting into one river, which was joined by the Astapus to form the main course of the Nile. This conception is illustrated in the maps of the 15th and 16th centuries, and until Bruce discovered the source of the Blue Nile, in 1770, little more than this was known of its course.

The Nile leaves the Victoria Nyanza at its N. end, and pouring over Ripon and Owen Falls proceeds through Lake Kioga (Chigoga), thence generally N.W. until it reaches the N. extremity of the Albert Nyanza. This section of the river is known as the Victoria or Somerset Nile, and below Foweira is impeded by a series of rapids culminating in the Murchison Falls, where the river drops 401 ft. in three cascades to the level of the Albert Nyanza. That lake is fed by the river Semliki, which drains the Edward Nyanza and forms, with the Kagera and other rivers flowing into the Victoria Nyanza from the S., the extreme head-waters of the Nile. From the N. extremity of the Albert Nyanza the river, here the Bahr-el-Jebel and later the



Arthur Nikisch, Hungarian musician



Nile. Map of the basin of the river from Lake Victoria Nyanza to the Mediterranean

White Nile, flows generally N. to the Mediterranean. At Refaj, 15 m. S. of Gondokoro, it enters the region of the plains and continues thence to Khartoum, some 1,096 m. to the N. Between these two points the Nile is navigable.

About 480 m. N. of Refaj the Bahr-el-Ghazal enters the Nile from the W., and 50 m. farther is the junction with the Bahr-el-Zeraf. Some 530 m. S. of Khartoum and 31 m. from the Bahr-el-Zeraf the Nile is joined by the Sobat, flowing from the highlands of Abyssinia, and at Khartoum the waters of the Blue Nile mingle with the main river. From that point there are no considerable tributaries with the exception of the Atbara, which flows into the main river 24 m. S. of Berber. In its course through the Nubian Desert the Nile makes two great bends, and from Khartoum as far as Assuan it is dangerous for navigation. Between these two points occur six cataracts.

whole country would be a desert. This Nile flood is an annual phenomenon comparable in regularity with the monsoon. The headwaters of the river receive water from the constant rains of the equatorial areas round the great lakes; this supply passes N. and is subject to great evaporation, and, being regulated by seepage, or percolation, into the swamps near Lake No, arrives in practically a constant volume by the White Nile at Khartoum. The Assuan dam holds back the Blue Nile and Atbara floods.

The three main requisites for production of a crop are suitable soil, an adequate water supply, and good drainage. The silt in the Nile valley may be said to be everywhere suitable, but water has always had to be artificially provided. Three methods were adopted in ancient days to overcome the vagaries in the height of the Nile, in addition to the basin system. The shadoof was invented

The valley cut by the river as far as Khartoum, about 1,500 m from the sea, is very narrow, and in Egypt fairly deep, the escarpment on either side leading to an irregular plateau, 200-300 ft. above the present bed of the river. The delta is considered to lie in an ancient bay of the Mediterranean, now filled in by silt brought down by the river which at one time might have fallen into the sea at Cairo; the river surface then would be 60 to 70 ft. lower than it is today. Silt and sand at Cairo is probably some hundreds of feet deep.

The importance of the Nile to Egypt and the Sudan cannot be overestimated. Without the annual inundations which fertilise the soil and provide the needful water for irrigation, the

to enable water to be lifted by direct manual labour on to fields which would otherwise remain unwatered; the water wheel (sakia) was brought into use with the assistance of oxen; and primitive canals were dug to take advantage of higher water levels upstream. The necessity for drainage depends to a large extent on the crops produced and the intensity of cultivation.

Among engineering works constructed on the Nile, for improving the water supply and for irrigation, may be mentioned:

The Delta barrage (1861), comprising the Damietta and Rosetta branches, cost nearly £2,000,000, and is 1,000 metres in length. In 1902 the Zifta barrage, 400 metres, and the Assiut barrage, 833 metres, were completed, and the Assuan Dam, which cost about £2,500,000, was brought into operation. This last is nearly 2,000 metres long, and in 1907-12 and again later it was thickened, heightened, and strengthened. The Eena barrage, in Qena prov., regulates the water drawn off by the Asfum and Kalabia irrigation canals; it was constructed in 1908 and is being remodelled so as to provide perennial irrigation for 600,000 acres, which will allow of growing two crops a year. The Nag Hammadi barrage, costing nearly £2,000,000, was completed in 1930, is 876 metres long, and waters Girga prov. The Sennar dam, on the Blue Nile, 160 m. S.S.E. of Khartoum, which was built 1921-25 for c. £5,600,000, extends some 3,000 metres and renders fertile 850,000 acres.

The most important places on the Nile are Damietta and Mansura, on the Damietta branch; Cairo, Beni-suef, Assiut, Girga, Qena, Assuan, Korosko, Wadi Halfa, Berber, Atbara, Khartoum, Omdurman, Kodok, and Gondokoro, on the main river. The Nile as far as the Victoria Nyanza is 3,526 m. long. See N.V.; also Assiut; Assuan; Damietta; Egypt; Khartoum; Owen Falls Dam; Sennar Dam.

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**Nile, BATTLE OF THE.** British naval victory, Aug. 1, 1798. The treaty of Campo Formio, Oct. 17,

1797, had practically made the Mediterranean a French lake. Mutiny had weakened the British fleet, and when Spain entered the war, the fleet had been compelled to abandon the Mediterranean. Bonaparte was instructed to seize Malta, drive the English from all their possessions, occupy Egypt, make a channel through the isthmus of Suez, and secure the Red Sea for France. Lord St. Vincent, who was blockading Cadiz, heard of the armament preparing at Toulon, and sent Nelson to look into the ports and observe the proceedings of the French. No proper force could be given to him, and his flagship, the *Vanguard*, was dismasted in a gale which left the French untouched. They put to sea on May 19, took possession of Malta, and were joined by convoys from Genoa, Ajaccio, and Cività Vecchia.

In England it was thought that Bonaparte might aim at Naples or Sicily, or land an army to invade Portugal, or strike at Ireland. Nelson, reinforced, sought the enemy for many weeks, deploring the want of frigates to scout for him. On Aug. 1 he discovered the French transports at Alexandria, and their fleet of 13 sail of the line and 4 frigates, commanded by Brueys, anchored in a broken line, in Abukir Bay. Nominally the French fleet was far superior to his own.

Nelson's plan was to attack the French van and centre, and to anchor, if it might be, inside and outside the French line. If Brueys was not surprised by Nelson's attack, he was unprepared for the English ships going between him and the shore. The Goliath, Zealous, Orion, Theseus, and Audacious all passed inside the enemy's line at about 7 p.m., anchoring, and raking with terrific fire the headmost ships of the squadron—*Guerrier*, *Conquérant*, *Sérieuse*, *Peuple Souverain*, and *Spartiate*. The *Vanguard*, flying Nelson's flag, anchored by the stern outside and abreast of the *Spartiate*, and the *Minotaur* and *Defence* followed. The *Bellerophon*, *Majestic*, *Swiftsure*, and *Alexander* successively attacked the three-decker *Orient*, which flew the French admiral's flag, the first two suffering serious loss. A tremendously destructive fire was poured into the enemy. The headmost ships of the French line were completely overcome, and at about 10 o'clock the *Orient* caught fire, and was soon ablaze. The *Guillaume Tell* and *Généreux* were fugitives. See Egypt; Nelson; Sea Power.

**Nilgai** (*Boselaphus tragocamelus*). Species of antelope, found in India. It stands between 4 ft. and 5 ft. high at the withers. The adult male is brownish grey, with white markings on the face and throat, white rings at the fetlocks, whitish underparts, and short, smooth, nearly straight horns. The females are smaller, brown, and hornless. The animal is remarkable for the comparative shortness of the hind limbs, and the rapid slope of the back line. It is found in the plains and hills of India.

**Nilgiri or NEILGERRY HILLS.** Hill range of the Deccan, India. The Blue Mts., so called from the overhanging haze which characterises the hills when seen from the plains, form a knot of high ground, alt. 6,000 ft., at the junction of the E. and W. Ghats. To the S. the Palghat Gap separates the sharp slopes from the S. continuation on the W. Ghats; to the N. the Wainad tableland stretches to Mysore. The high ground consists almost entirely of open, grassy "downs," separated by forested glades, from which rise the peaks. Dodabetta, 8,760 ft., is the culminating point, while close to it Snowden, Elk Hill, and Club Hill, all higher than 8,000 ft., are on the edge of an amphitheatre within which lies Ootacamund. This elevation modifies the climate, so that the Nilgiris are a hot weather resort for Europeans. Cinchona, jalap, ipecacuanha, and coffee are grown upon numerous plantations. Of the natives the Todas are pastoralists, the Badagas tillers of the soil; primitive Kurumbas and Irulas live in jungles.

**Nilgiris.** District of Madras state, India, comprising almost entirely the area of the Nilgiri Hills. Only about one-tenth of the total area is tilled, chiefly for native food grains and plantation products, coconuts, etc. Its area is 989 sq. m. Pop. 209,709.

**Nilometer.** Instrument or gauge for measuring the annual floods of the Nile. Anciently such instruments were placed all along the river; the oldest existing one was set up in 847 B.C. on the island of Rhoda, near Cairo. It consists of a square well connected with the Nile by a canal and containing a granite pillar marked with 24 lines at intervals of one cubit.

**Nilotic.** Term denoting the E. division of the true negro race. Wholly within British control, they occupy the valleys and marshlands of the upper Nile basin, to which they became confined by the pressure of pastoral tribes of Hamitic stock. Tall, slim, narrow-headed, and the darkest of all negroes, they are distinguishable from the W. or Nigritic division by their more retreating foreheads and



Nilgai. Antelope which is found in the plains and low hills of India  
W. S. Berridge, F.Z.S.

longer legs. Mostly unclothed, they have personal ornaments including metal and ivory armlets, ostrich shell beads, and lip plugs; most tribes also extract the lower incisors. They practise cattle-breeding and agriculture, and subsist largely on milk and fish. Their round huts, with conical or domed roofs, are sometimes supplemented by bachelor-huts on tall posts and by pile granaries. They use clubs, socketed spears, bows, and sometimes wrist-knives, with wood or hide shields.

The principal tribes are the Shilluk, Dinka, Nuer, Acholi, Kavirondo, Jaluo, Bari, Latuka, Lango, Nandi, Suk, and Turkana. Their southernmost representatives, the Masai, exhibit the fullest infusion of Hamitic blood and culture. See Negro.

**Nim** (*Azadirachta indica*). Tree of the family Meliaceae, also called neem, margosa, or bead-tree. A native of India, it has leaves divided into numerous oval leaflets with toothed edges, and branching panicles of small bluish flowers, succeeded by olive-like purple fruits, each containing a single seed. The latter has a natural perforation, which causes it to be used in the construction of rosaries, and on this account Roman Catholics call the tree *Arbor Sancta*. The timber is useful for building, and the bark affords a tonic, whilst the roots are used as a vermifuge and the fresh leaves as a natural poultice for glandular swellings and in rheumatism. Dried leaves inserted between the leaves of books, etc., repel the attacks of destroying insects. The same property resides in the seeds, which are powdered to form an insect-poison, and when dissolved in water may be utilised as a hair-wash. The fruit yields the medicinal margosa oil, which serves also as a dye for cotton goods.

**Nimbus** (Lat., a cloud, divine effulgence). In art, the halo encircling the head of a holy personage. (See Aureole; Halo.)

In meteorology, nimbus means a rain cloud, really dense masses of dark, formless clouds with ragged edges, through which is visible a higher sheet of altostratus. Low fragments of cloud floating below the nimbus are called fractonimbus or scud. Steady rain or snow usually falls from the edges of the nimbus. See Cloud, colour plate.

**Nîmes.** City of France, capital of the dept. of Gard. It is situated in a fertile plain W. of the Rhône



Nîmes arms

and E. of the Cévennes Mts., 25 m. N. of the Mediterranean and 174 m. S. of Lyons. Pop. 104,103. It has Roman remains; other buildings are the cathedral of S. Castor, the churches of S. Baudile and S. Paul, the citadel, dating from the 17th century, and several museums. A former Jesuit college houses one collection and also the public library. The museum of painting and sculpture includes a collection of pictures purchased by the city in 1875. There is a palais de justice. Industries include the manufacture of silk and other textiles, and a trade in wine. The old fortifications have been replaced by boulevards, while another public

notable, and it is said to have held over 20,000 persons. The Maison Carrée is a perfect Roman temple. The Temple of Diana and two Roman gates still remain, but nothing is left of the capitol. The ruined Great Tower, another Roman edifice, stands on Mont Cavalier, 375 ft. high. Just outside are the Pont du Gard, a Roman aqueduct, and the remains of some baths, both built under Agrippa.

Having taken the existing village from the Gauls, the Romans made Nîmes into one of their greatest cities. Augustus, who was mainly responsible for this, built its extensive walls. After the fall of the Roman empire the city suffered decline. In 1185 it became part of the county of Toulouse and was again surrounded with walls. For a short time in the 16th century there was a university here. In the time of the Reformation it was a Protestant stronghold and the scene of considerable bloodshed. Four ecclesiastical councils were held at Nîmes, the most important being the one under the presidency of Pope Urban II in 1096. Alphonse Daudet was one of several eminent men born in the city. In the unoccupied zone of France during the Second Great War until Nov. 1942, it was liberated by French troops under Gen. de Lattre de Tassigny, Aug. 28th, 1948. See Maison Carrée.

**Nimitz, CHESTER WILLIAM** (b. 1885). American sailor. Born at Fredericksburg, Texas, Feb. 24, 1885, he graduated from the U.S. naval academy in 1905. During the First Great War he was chief of staff to the American submarine force in the Atlantic. Promoted rear-admiral, 1938, he took over command of the Pacific fleet after the disaster of Pearl Harbour in 1941, with the rank of admiral; his command included army and

marine units as well as naval ones. Operations against the Japanese in the Solomon, Gilbert, and Marshall Islands and at Iwojima were directed by Nimitz, who



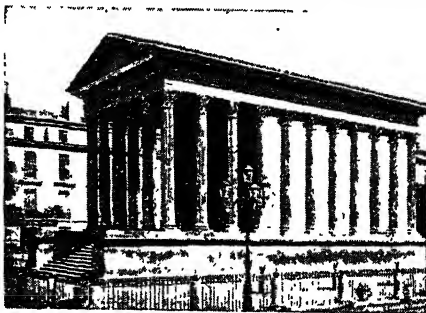
Chester Nimitz, American admiral

in 1944 was promoted fleet admiral. He directed operations against Leyte, Luzon, and Okinawa, and signed the Japanese surrender as U.S. representative, Sept. 2, 1945. Then he became chief of U.S. naval operations, retiring 1947. In 1949 he was appointed U.N. administrator of the Kashmir plebiscite.

**Nimrod.** In the O.T., a son of Cush, and a notable hunter and warrior (Gen. 10). He ruled at Shinar and is regarded as the founder of the Assyrian power. Nimrod was the pen-name of C. J. Apperley (q.v.).

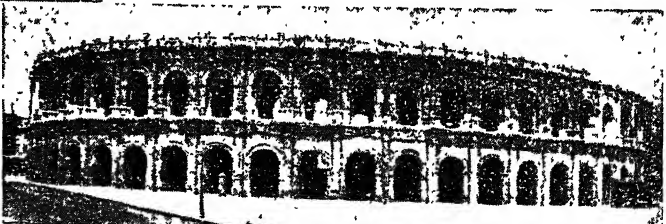
**Nine Pins.** Wooden pieces with which the game of skittles or nine pins is played. The object of the game is to knock the pins over with a wooden ball at the fewest possible attempts. In the U.S.A. the popular game of bowling has developed from nine pins. See Skittles.

**Nine Power Agreement.** Signed in 1923 between Great Britain, France, Italy, Belgium, the Netherlands, Portugal, the U.S.A., Japan, and China. It guaranteed the sovereignty, independence, and administrative and territorial integrity of China, pledging the signatories to assist that country to maintain a stable govt., and ensuring non-discrimination in diplomatic and commercial relations. The treaty was violated by Japan's military action in Manchuria in 1931. After her attack on China in 1937, the treaty was invoked, but a conference at Brussels failed to yield any result. See China; Japan; Manchuria.

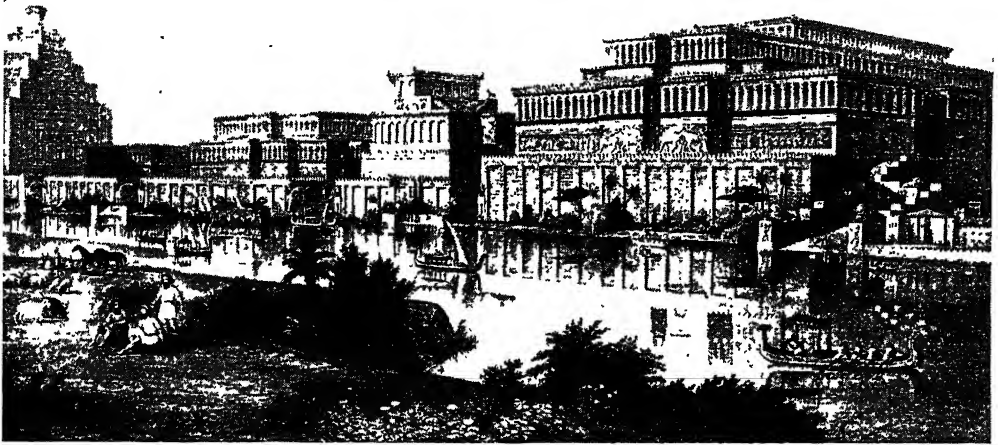


amenity is the Fountain Gardens. The city has a service of electric tramways and several theatres.

One of the most ancient and interesting of French cities, Nîmes is famous for its Roman remains. It was founded by Augustus, and an amphitheatre and other features of a typical Roman city were soon erected. The amphitheatre is in an excellent state of preservation. Its vaults, which resemble a natural cavern, are



Nîmes, France. Roman amphitheatre built 1st-2nd century A.D. It contained thirty-four tiers of seats and held 20,000 spectators. Above, left, Maison Carrée, a Roman temple erected about A.D.1



Nineveh. Reconstruction of the palaces on the banks of the Tigris, from plans of the existing remains. The great tower on the left represents the supposed tomb of Sardanapalus; on the right is the palace of Esarhaddon

From Layard's *Monuments of Nineveh* (2nd series), by courtesy of John Murray

**Nineteenth Century and After.** THE. British monthly review. It was established in March, 1877, by James T. Knowles, founder of the Metaphysical Society. Its first issue contained a prefatory sonnet by Tennyson and contributions by Matthew Arnold, Gladstone, Huxley, and Manning. The last two words in the title were added in 1901. The review aims at registering its "disbelief in the contemporary fallacy of collective identity," and 'at an objective and unbiased presentation of home and foreign affairs, arts, and letters. It is edited at 10, Orange St., London, W.C.2.

**Ninety-Eight.** Term used in connexion with the rebellion that broke out in Ireland in 1798. England was at war with France, and there was general unrest. A small rebellion in Ulster was crushed and the whole country placed under martial law. Under this there was a certain amount of terrorism, and in May rebellion broke out in Kildare. Other Leinster counties followed, but the risings were quickly put down. In Wexford, however, the movement was more serious, and 15,000 rebels under Father Murphy seized the county town there and set up a camp on Vinegar Hill. A large body attacked and almost destroyed New Ross, but the insurgents were defeated when they marched to Arklow. On June 21 General Lake attacked their camp on Vinegar Hill, and his complete victory there practically ended the rising. The movement is commemorated in J. K. Ingram's verses, *Who fears to speak of '98?* In the same way the Jacobite risings of 1715 and

1745 are known as the Fifteen and the Forty-five. See Vinegar Hill.

**Nineveh.** Assyrian city on the left Tigris bank opposite Mosul, now in Iraq. Its walls, enclosing 1,800 acres, with 15 gates and many towers, were protected on three sides by a moat filled from the Choser tributary. This crossed the city to the Tigris, once flanking its W. wall for 2½ m., but now separated by a broad crescent of silt. A double earthwork defended the E. wall.

A remote Neolithic settlement, confirmed by obsidian implements from the lowest Kuyunjik stratum, preceded an immigration of metal-using people (Gen. 10) from S. Babylonia, whose fish-goddess Nina gave her name to the city. Worshipped in a temple repaired by Hammurabi, about 2100 B.C., she became identified with Ishtar. A Mitannian domination, about 1400, preceded the outburst of Assyrian conquest under Shalmaneser I, about 1300; he restored the temple, although making Calah his capital. It was made a royal residence by Ashurbelkala, about 1100 B.C.

Nineveh owed its chief renown to Sennacherib (2 Kings 19), who erected a majestic palace at Kuyunjik and an arsenal at Nebi Yunus, the traditional tomb of the prophet Jonah. Besides canalising the city, he laid out a park wherein he acclimatised exotic animals and plants, including the Arabian cotton. Esarhaddon widened the streets and built a palace at Nebi Yunus. In Ashurbanipal's palace, N. of Sennacherib's, Rassam found, 1854, an immense cuneiform library, now in the British

Museum. The fall of the city, foretold by Nahum and Zephaniah, was achieved by the Median Cyaxares and the Babylonian Nabopolassar, 606. Its memory was already effaced when Xenophon traversed its ruins, 401 B.C., and a Sassanian village grew upon the mounds. See Babylonia; Kuyunjik; Mesopotamia. Consult Discoveries in the Ruins of Nineveh and Babylon, Austen Layard, 1853.

**Ningpo.** City in Chekiang prov., China. It is situated at the junction of the two branches of the river Yung, 12 m. from the mouth. Ningpo is 1,200 years old; the site of old Ningpo, which is said to have existed 2205 B.C., is at some distance from the present city. The circuit of the walls, built about 870, is 5 m. Portuguese traders visited Ningpo in 1522, but were expelled in 1542. The city was occupied by the British, 1841, and declared a treaty port by the treaty of Nanking in 1842. A British consulate was established here in Dec., 1843, and a customs station in 1861. Pop. 218,774.

**Ningsia** or NINGSIA. Province of N.W. China. It contains 13 counties with Ningsia city as capital. There is no railway and only a few highways. River junks connect it with neighbouring provinces. Around Ningsia city is a network of canals, which provides water for a number of small farms. The chief products are wheat, wool, and livestock. The N.W. region is inhabited by nomadic Mongolian-speaking Khalkas and Buriats. The Alashan range runs through the centre of the province. Area 106,143 sq. m. Population 724,000.



**Ninian** OR NINIAS (d. c. 432). British bishop and saint. A native of N. Wales, he was educated in Rome, and being consecrated bishop, built what is said to have been the first stone church in Britain at Whithorn, in Galloway. A missionary among the southern Picts, he is credited with maintaining the Catholic faith against the teaching of Pelagius. His festival is Sept. 16.

**Ninib.** Babylonian and Assyrian deity. Appropriating the attributes of Ningirsu of Lagash and other vegetation gods, he was, as son of Enlil (Bel), deemed to represent the beneficent vernal sun, in contradistinction to Nergal, representing the destructive summer heat. Ashurnatsirpal invoked him as the god of battles.

**Ninnis Glacier.** Ice field on the coast of King George V Land, Antarctica. It is about 50 m. E. of the similar but smaller Mertz glacier. It was discovered by the Mawson expedition (1911-14) and named after Lieut. Edward Ninnis, a member of the expedition who met his death there.

**Niobē.** In Greek mythology, the wife of Amphion, king of Thebes, by whom she had twelve children. She was so proud of this that she mocked the goddess Leto or Latona, who had only given birth to two children, whereupon the offended goddess incited her son Apollo and her daughter Artemis to slay all the children of Niobē with their arrows. Niobē was changed into a stone, in which form she incessantly wept for her lost children, streams of water trickling down the stone. The legend of Niobē has frequently been treated in art. The group of Niobē at Florence is a copy of one which is attributed to Scopas or Praxiteles.



Niobē, with one of her daughters: copy of sculpture attributed to Scopas or Praxiteles. Uffizi Gallery, Florence

See Magnesia.  
**Niobium** OR COLUMBUM. One of the less known metallic elements, the properties of which indicate that it may in future have applications in metallurgy. Its chemical symbol is Nb or Cb, and it is one of the transitional elements in the second long period of the periodic table of the elements. Its atomic number is 41; atomic weight,

92.91; specific gravity, 8.4; melting point, 1,950° C.; crystal form, body-centred cubic, with lattice constant  $a = 3.2941$  and an interatomic distance of 2.8528 Å.

It occurs in nature chiefly as columbite,  $(\text{FeMn})\text{Cb}_2\text{O}_6$ , and it is often associated with tantalite,  $(\text{FeMn})\text{Ta}_2\text{O}_6$ . It is obtained chiefly from deposits in N. Nigeria and from S. Dakota. The metal was first separated in 1846 and it is now extracted with tantalum by fusion with caustic potash.

Metallic niobium is light steel-grey in colour and similar to wrought iron in mechanical properties, being easily fabricated and welded. Being resistant to corrosion and attack by acids, it has been used for chemical apparatus. The metal readily absorbs gases and has been used as a "getter" in thermionic valves. It is available as wire, sheet, and rod, and the ferro-alloy is added to steels, in which it forms stable carbides. See Getter; Metallurgy; Nitriding; Tantalum.

**Niobrara.** River of the U.S.A. Rising in the S.E. of Wyoming, it flows E. through Nebraska, and joins the Missouri on the right bank at Niobrara. It is a rapid, unnavigable river 450 m. long.

**Niort.** City of France. It stands on the left bank of the Sèvre Niortaise, 38 m. N.E. of La Rochelle, in the dept. of Deux Sèvres, of which it is the capital. Its buildings include the beautiful church of Notre Dame, built in the 16th century. The churches of S. Andrew and S. Hilary are modern. The keep of the castle still stands, and there is a fine modern town hall, and a palais de justice. The old town hall houses a museum, and there is a botanical garden.

The industries include tanning and the making of gloves and boots, while there are many market gardens in the vicinity. Niort grew up around a castle built by the count of Anjou, in the 12th century, and was a flourishing port. During the wars of religion it was a Huguenot centre, and was besieged; in 1588 the cathedral of S. Andrew was destroyed. Pop. 32,752.

**Nipigon.** Lake and river of Ontario, Canada. About 30 m. N. of Thunder Bay on Lake Superior, it is 70 m. long and 40 m. broad; area 1,730 sq. m. In it are about 1,000 islands, and the Ogoki flows into it from the N. The river Nipigon passes from the lake into L. Superior, and is famed for its trout.

**Nipissing.** Lake of Ontario, Canada. It lies N. of Lake Huron, is 50 m. long and about 20 m. broad; area 330 sq. m. The Sturgeon flows into it and the French River, 55 m. long, carries its waters to Lake Huron. It contains many islands. The part of Ontario around it is known as the Nipissing dist.

**Nippon.** Variant spelling for Nihon, or Dai Nihon, the Japanese name for Japan (*q.v.*).

**Nippur.** Sumerian city at Nuffar on the Shatt-en-Nil, 20 m. E.N.E. of Diwaniya, central Babylonia. Its identification with Calneh (Gen. 10), and that of Ezekiel's river Chebar with the Nil canal, are tentative. It was examined by Layard 1851, and excavations by Peters, Haynes, and Hilprecht, 1889-1900, revealed a continuous history from reed-huts on Neolithic marshes to palaces of Parthian kings. A centre of religion and learning, its Enlil temple, restored intermittently, from Naramsin to Ashurbanipal, ultimately became a Seleucid fortress. Its yield of clay tablets included 40,000 temple records and 730 business documents of brokers and bankers of Persian kings of the 5th cent. B.C. See Deluge Legends; Parthia.

**Nirvāna** (Skt., extinction). Buddhist term for the spiritual state attained by one who has conquered self and, by the exercise of self-sacrifice, sympathy, loving thought, and deeds of kindness, extinguished desire. The attainment of Nirvāna implies the extinction of personality and the union of the individual with the infinite. See Karma.

**Nisan.** First month in the Jewish eccles. year and seventh in the civil or secular. It corresponds approximately to the Christian month of April. The name Nisan was adopted from the Babylonian calendar after the Captivity (Neh. 2, v. 1) and replaced the Jewish name of Abib (*q.v.*).

**Nish** OR NIS. Town of Yugoslavia. The ancient Naissus, it is the chief city in Upper Moesia or Morava. It stands on the Nisava, is the junction of the rly. from Belgrade, 180 m. N.W., to Sofia with the line to Salonica, and has extensive rly. works. It was the birthplace of Constantine the



**Nissen Hut.** Invented for the housing of armed forces, these huts at Brixton, London, were erected during the Second Great War to accommodate bombed out families

Great. On the outbreak of the First Great War, the Serbians made it their temporary capital. It was taken by the Bulgarians Nov. 5, 1915, but recaptured by the Serbs Oct. 12, 1918. In the Second Great War it was occupied by German forces, April 9, 1941, and liberated Oct. 16, 1944, by Bulgarians with Russian troops and Yugoslav patrols. Pop. 35,465.

**Nishapur.** Town of Persia, famous as the birthplace and burial place of Omar Khayyám (*q.v.*). It is in the prov. of Khorassan, about 50 m. W. of Meshed, and trades in cotton and woollen goods and fruits, chiefly almonds. Some 30 m. N. of it are turquoise mines.

**Nisibis.** Ancient city of Mesopotamia, also called Antiochia Mygdoniae. It is the modern Nisibin on the boundary between Syria and Turkey. It changed hands several times in many wars between Romans and Parthians and Persians, but finally passed to the last, after the disastrous expedition of Julian the Apostate, 363. Nisibin was included by the Turks in the vilayet of Diarbekir.

**Nisi Prius** (Lat., unless before). English legal term. By Magna Carta, it was ordered that certain writs of assize should be tried before justices who should be sent into every county at least once a year. At a very early date it became customary to try other actions before the judges of assize. Jurors used to be summoned, by writ of venire, to the courts at Westminster on such and such a day, unless before that day the king's justices should come into their county. A trial of a civil cause before a judge of assize was therefore called a trial at *nisi prius*; and the term is still adhered to, and recognized by statute.

**Nissen Hut.** Building used by the British armed forces. It consists of two corrugated iron struc-

tures of semi-circular section erected one within the other on a metal frame, with a small air space in between. The floor above the brick foundation is of wood, as are the end walls, in which doors and windows are built. Dormer windows are sometimes built into the side walls. The length is from 16 ft.

upwards. The hut, self-supporting and weatherproof, was invented in 1915 by Col. Peter Nissen, R.E., to meet an urgent need for shelter. Among its advantages are the rapidity with which it can be erected or dismantled, and the ease with which it can be transported; six men can put up a Nissen hut in one day. The principle of construction was later applied to factory buildings.

**Nith.** River of Scotland. Rising in Ayrshire, it flows 55 m. S.E. through Dumfriesshire to the Solway Firth, 13 m. below Dumfries. Its valley is known as Nithsdale.

**Nithsdale, WILLIAM MAXWELL, 5TH EARL OF (1676-1744).** Scottish Jacobite leader. Son of Robert, 4th earl, in 1715 he joined Derwentwater in the rebellion, and with other Jacobite leaders was captured at Preston and sentenced to death. Nithsdale was saved by his wife, who, after pleading vainly with the king, paid a farewell visit to her husband in the Tower, disguised him as a woman in hood and cloak, and got him safely away. Nithsdale escaped to Calais. His wife was arrested, but later was permitted to join him. His estates were forfeited, but restored to his son on the earl's death, March 20, 1744. The title was forfeited.

**Niton.** Alternative name for the gaseous element, no. 86 in the periodic table sometimes called radon. See Radium; Radon.

**Nitrates.** Name given to the salts or compounds of nitric acid, *i.e.* those formed by the substitution of metals for the hydrogen of nitric acid (*q.v.*). Nitrates find useful applications, *e.g.* the potassium salt ( $\text{KNO}_3$ ) in the manufacture of gunpowder, glass, enamels, pyrotechnics, and fertilisers; ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ) in freezing mixtures, explosives, and fertilisers; and calcium nitrate,  $\text{Ca}(\text{NO}_3)_2$ , as a fertiliser.

Potassium nitrate (nitre or saltpetre) has been used since ancient times. It is found in Bengal, Bombay, and in caves in Ceylon formerly tenanted by men, animals, and bats, and as an efflorescence on soils in hot countries such as Peru, Bolivia, S. Africa, and Egypt. Up to the beginning of the 19th century it was made in Europe from artificial saltpetre earth by stacking decomposing organic matter in mounds and moistening from time to time. The nitrification process was allowed to proceed for about a year before the mounds were extracted with water and the dissolved nitre obtained by evaporation. Saltpetre is extracted in India from natural saltpetre earth by lixiviating in wooden or earthenware vessels and concentrating in iron pots; the crude product contains 45-70 p.c. of potassium nitrate. Saltpetre, or conversion nitrate, is also made from sodium nitrate and potassium chloride by mixing a saturated solution of the former salt with a molecular proportion of potassium chloride and concentrating. Nearly pure potassium nitrate is deposited on cooling.

Another mineral of economic importance is nitratine (sodium nitrate), which before 1900 supplied the bulk of the world's nitrogen requirements. Since then the extraction of nitrogen from coal and the atmosphere, and the direct synthesis of ammonia from nitrogen and hydrogen have furnished 92 p.c. of the world's production. In the Chilean desert regions, nitratine deposits occur among other soluble alkali salts. Because of their solubility, such minerals can accumulate only in extremely arid regions and the association of the Chilean deposits with volcanic rocks suggests that the nitrates have been derived from the latter by some leaching process. Chilean saltpetre is mostly used as a fertiliser.

**Nitrator.** Chemical apparatus in which the operation of nitration is conducted. The essential features are a container usually constructed of iron or lead, but sometimes of earthenware, fitted with means for heating or cooling the contents, either by a jacket or internal coils for steam or water circulation; pipes for the admission of raw materials and acids; provision for the removal of fumes, and means of agitating the contents. For nitroglycerine a lead vessel is generally used, and because of the sensitive nature of the explosive compressed air is injected for agitation. A drowning

pit is also arranged below, into which the contents may be quickly dumped if any dangerous action commences. Nitro-aromatic compounds are dealt with in large iron nitrators fitted with mechanical agitators. These frequently have a capacity of 1,600 gallons, producing about 4 tons of explosive at each operation. See Explosives.

**Nitre-cake.** By-product in the manufacture of nitric acid from sodium nitrate and sulphuric acid. Chemically it is known as acid sodium sulphate or bisulphate of soda ( $\text{NaHSO}_4$ ). Nitre-cake is used as an acid flux in the decomposition of minerals and in dyeing.

**Nitric Acid** or **Aqua Fortis** ( $\text{HNO}_3$ ). One of the oldest known nitrogen compounds, containing that element with hydrogen and oxygen. It is still manufactured by decomposing Chile saltpetre (sodium nitrate) with sulphuric acid, a method closely resembling those employed in the 16th century for the production of aqua fortis for parting gold and silver. A modern process is the catalytic oxidation of ammonia by passing it mixed with air over heated platinum gauze. Another method is bringing about the direct union of oxygen and nitrogen by the electric arc (Birkeland-Eyde process). Nitrogen peroxide is the chief gas formed, and this, absorbed by water, yields nitric and nitrous acids, the latter being subsequently converted into nitric acid.

Nitric acid is largely used for the manufacture of explosives—nitroglycerine, gun-cotton, trinitrotoluene, etc.—and aniline dyes. It forms a series of salts known as nitrates, some of which are largely employed in industries. Silver nitrate is valuable in photography, lead nitrate, iron nitrate, and aluminium nitrate in dyeing and calico-printing, and barium and strontium nitrates in fireworks.

**POISONING BY NITRIC ACID.** Two drachms of concentrated nitric acid have proved fatal. As soon as the acid is taken, violent pain is felt in the mouth, gullet, and stomach, followed by severe vomiting. The lips and teeth are stained yellow, and the mucous membrane is excoriated. The tongue becomes swollen, symptoms of collapse supervene, the pulse becomes weak, the skin cold and clammy. Eventually death occurs from exhaustion, usually in from 18 to 24 hours. If death does not occur from shock, bronchitis, congestion of the lungs, and pneumonia may follow. Inhalation of the fumes alone may be fatal. Treatment

should be directed to neutralising the acid as quickly as possible. Calcedined magnesia is the best antidote, but sodium bicarbonate, chalk, whitening, ceiling plaster, etc., may be administered.

**Nitriding.** A process of case-hardening (*q.v.*), used to produce a thin but hard case on finished steel articles. The steel part is finished by machining and heat-treated to give the properties desired for the core. It is heated for 40–90 hours at  $500^\circ \text{C}$ . in a box through which ammonia is circulated, and then cooled slowly in the same box. Part of the ammonia breaks up into nitrogen and hydrogen, and some of the nitrogen is absorbed in the surface of the steel, forming iron nitride,  $\text{Fe}_3\text{N}$ . Plain carbon steels can be treated in this way, but better results are obtained with alloy steels containing small amounts of chromium, molybdenum, or aluminium. The process gives a case extremely hard but needing no subsequent heat-treatment. It is used for spindles, gears, and valves. See Carbo-nitriding; Carburising.

**Nitrification.** The conversion of nitrogen existing as organic matter or ammonium compounds into nitric acid, and then by combination with a base into nitrates. This is effected by micro-organisms. In soils it is particularly important, since only in the form of nitrates do most plants absorb the nitrogen they require. It takes place in three stages: first, the conversion of organic nitrogen into ammonia by the action of moulds and the organism *Bacillus mycoides*; second, the conversion of ammonia into nitrites largely by the action of the organisms *Nitrosomonas* and *Nitroso-coccus*; finally, the conversion of nitrites into nitrates, mainly by the action of the organism *Nitro-bacter*.

Essential conditions are (1) suitable food such as potash, lime, sulphates, phosphates, carbon dioxide; (2) a base with which nitrous and nitric acid may combine; (3) suitable temperature, about  $0^\circ$  to  $55^\circ \text{C}$ .; (4) sufficient moisture; (5) absence of strong light; (6) enough oxygen: nitrification does not proceed in waterlogged soil. Potassium carbonate accelerates nitrification in soils rich in humus. Where there is a deficiency of oxygen, a further series of micro-organisms brings about the liberation of free nitrogen from nitrates in soils and manure heaps; this process is termed denitrification.

**Nitro-Benzene.** Yellow liquid with characteristic odour resembling oil of almonds and sometimes used as a cheap substitute in perfumery, etc. It is sometimes called oil of myrbane. An important raw material for dye manufacture, it can be converted to aniline. See Aniline Dyes.

**Nitrocellulose.** Term used to designate the esters of cellulose. These are more properly termed the cellulose nitrates, and are made by treating bleached cotton linters with a mixture of sulphuric acid, nitric acid, and water. The product is characterised by its nitrogen content, which falls into three main grades, that with 10.8 p.c. being used in the manufacture of celluloid, that with 11.9–12.2 p.c. (collodion cotton) for production of films and lacquers, and that with 13 p.c. (gun cotton) for explosives. Celluloid, the pioneer plastic of the 1860's, continued to hold its place in world markets, and nitrocellulose lacquers have maintained their popularity as decorative finishes in spite of advances in other synthetic products.

**Nitro-Compounds.** In chemistry, hydrocarbon derivatives containing  $\text{NO}_2$  groups. They are made by the action of nitric acid upon hydrocarbon, and the process applied to the benzene series is known as nitration, examples of the products being nitrobenzene and nitro-toluene. Nitroglycerine and nitrocellulose are well-known explosives formed by the action of nitric acid on glycerine and cellulose respectively. Trinitrophenol or picric acid, and trinitrotoluene are made by the action of nitric acid on phenol and toluene, and are also explosives.

**Nitrogen.** One of the gaseous elements. Its chemical symbol is N.; atomic weight, 14.008. It was discovered in 1772 by Rutherford, professor of botany in the university of Edinburgh. Lavoisier shortly afterwards proved the existence of nitrogen in the air, and called it azote, a name by which it is still known in France. Chaptal, in 1790, first suggested the word nitrogen because he discovered it in nitre or saltpetre.

Nitrogen occurs in the free state in the atmosphere, of which it constitutes about four-fifths. The element also occurs in a combined state as saltpetre and Chile nitre, and as an essential constituent of animal and vegetable organisms. Animals have no power of directly absorbing the nitrogen of the atmosphere, but are dependent on

nitrogenous foodstuffs for their supply of this element. The nitrogenous materials are built up by plants which obtain their nitrogen from the soil, and the object of manuring the land with ammonium sulphate and Chile salt-petre is to replace the nitrogen extracted from it by plants. Natural sources of nitrates found in the soil are the combination of oxygen and nitrogen which takes place during thunderstorms. The quantity so supplied amounts

large proportion of the nitrogen used in industry. The specific gravity of pure nitrogen is 0.96737. The element is incombustible, and does not support combustion. It is also distinguished by its inactivity, although a form of "active" nitrogen, i.e. nitrogen in the atomic form, was discovered by R. J. Strutt (Lord Rayleigh) in 1911.

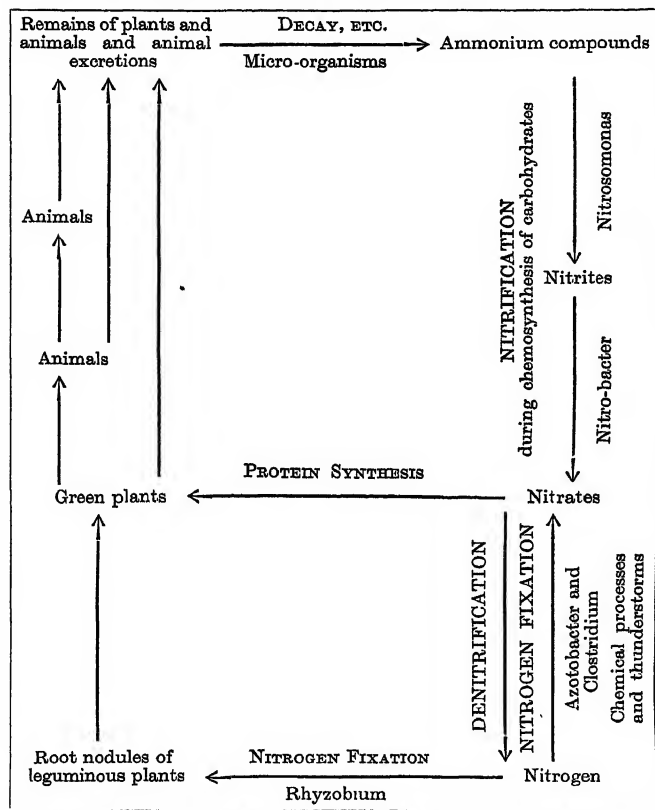
The compounds of nitrogen and hydrogen are ammonia ( $\text{NH}_3$ ), which can be prepared by the direct

being first observed by Davy. It was this effect which gave to it the name of laughing gas. Nitrous oxide is employed as an anaesthetic in dentistry and other surgical operations which require only a short period of unconsciousness. It is prepared by gently heating dried ammonium nitrate, which splits up into nitrous oxide and water. When required as an anaesthetic it needs further purification. It was liquefied by Faraday in 1823.

Nitrogen dioxide was first prepared by van Helmont. It is best made by dissolving copper foil in nitric acid and collecting the gas in a pneumatic trough. Nitrogen trioxide is a red gas made by acting on starch with nitric acid. It forms with water the unstable nitrous acid, which, however, combined as nitrites, forms stable bodies. See Air; Atmosphere.

**Nitrogen Cycle.** Term applied to the series of phenomena, chiefly biological, during which the limited quantity of nitrogen is made to serve successively the needs of diverse organisms all requiring nitrogenous substances for building up the proteins of their protoplasm. Animals and parasitic and saprophytic plants acquire organic nitrogenous materials directly or indirectly from green plants, while these absorb inorganic compounds of nitrogen mainly. The result is a drift from the inorganic to the organic condition, with a tendency for the accumulation of nitrogen in the dead remains of plants and animals. That this tendency is not fulfilled to the detriment of green plants is largely due to the activities of micro-organisms in the soil, which liberate inorganic compounds of nitrogen. This normally inert gas is, however, drawn into the cycle again by the agency of other micro-organisms, by chemical processes of nitrogen fixation; and to some extent by electrical disturbances during thunderstorms.

**Nitroglycerine.** The most important of the various substances used in the manufacture of blasting explosives and propellants. The name has been adopted in all countries, although the correct chemical designation is the trinitrate of glycerine. Nitroglycerine was discovered in 1846 by Ascanio Sobrero, an Italian chemist. It was not until 1859 that Alfred Nobel realized the possibilities of its use as an explosive, and in 1862 he erected a factory for its manufacture at Heleneberg, near Stockholm. Acci-



Nitrogen Cycle. Diagram of the salient features of the circulation of nitrogen

each year to about 11 lb. of combined nitrogen per acre.

Nitrogen is prepared artificially by exhausting the oxygen from a confined space of air and so leaving impure nitrogen behind. This is conveniently done by exposing phosphorus in a bell-jar of air over a trough of water. Chemical methods are also employed, as heating together potassium nitrite and ammonium chloride, or passing chlorine into ammonia. Nitrogen is also obtained from the atmosphere by physical methods, one of these, the fractional distillation of liquid air furnishing a

union of the elements; hydrazine or diamide ( $\text{N}_2\text{H}_4$ ); and azoimide or hydrazoic acid ( $\text{N}_3\text{H}$ ). Nitrogen compounds with the haloid elements also occur, nitrogen chloride and iodide being very explosive.

There are five oxides of nitrogen: (1) Nitrous oxide, nitrogen monoxide, or laughing gas ( $\text{N}_2\text{O}$ ); (2) Nitrogen dioxide, peroxide, or tetroxide ( $\text{N}_2\text{O}_4$ ) ( $\text{NO}_2$ ); (3) nitrogen trioxide ( $\text{N}_2\text{O}_3$ ); (4) nitrogen hexoxide ( $\text{N}_2\text{O}_6$ ); (5) nitrogen pentoxide ( $\text{N}_2\text{O}_5$ ).

Nitrogen monoxide was discovered by Priestley in 1772, its exhilarating effects when inhaled

dents in manufacture caused many difficulties, and, although these were gradually overcome, the use of the oil was inconvenient and dangerous. A great advance was made when Nobel, who had been making continuous efforts to increase the safety of the oil during use and transport, discovered that it was absorbed by the siliceous earth, kieselguhr. For further details of this process see *Dynamite*; *Explosives*.

The new explosive was thus securely established, and its use in Europe and America increased rapidly. Nevertheless, it suffered two defects, (a) in wet conditions water displaced the nitroglycerine, and (b) the use of an inert absorbent decreased the explosive effect. Nobel, however, found that by adding collodion to nitroglycerine the plastic and elastic mass formed could be moulded into cartridges which were comparatively safe to handle, and could be used under water and had a very high explosive effect. The process has been termed "gelatinisation." The nitroglycerine blasting explosives used today are all essentially based upon Nobel's discoveries. The two important advances made since his day have been the development of low freezing and ammonium nitrate explosives.

Nitroglycerine is made from glycerine, a by-product from the manufacture of soaps from oils and fats, by nitration with a mixed nitric and sulphuric acid. During the war, a continuous manufacturing process was operated in this country. The glycerine flows in at the top and the mixed acids at the bottom of a cylindrical vessel, and is circulated by a rotating stirrer. The nitroglycerine-acid mixture is removed continuously through an overflow pipe and passes horizontally to a separator.

Pure nitroglycerine is a yellow oil, of density 1.6, and freezes at 13° C. Its rate of detonation in the open is about 1,600 metres/sec., but when confined, or when initiated by a powerful detonator, it detonates at a much higher rate of about 7,200 metres/sec. See *Explosives*; *Blasting Gelatine*.

**Nitronaphthalenes.** Nitro derivatives of naphthalene first prepared by Laurent, in 1835, by nitrating naphthalene under suitable conditions. The most important is alpha-nitronaphthalene ( $C_{10}H_7NO_2$ ), prepared on a small scale by dissolving naphthalene in glacial acetic acid, adding strong

nitric acid, and heating for half an hour. On a commercial scale a mixture of sulphuric acid and nitric acid is employed. Nitronaphthalene is a solid which crystallises in long lustrous yellow needles, insoluble in water, but readily soluble in benzene, ether, carbon bisulphide, and hot alcohol. Nitronaphthalenes render nitroglycerine non-sensitive to concussion, and when present in small quantities have the important property of preventing dynamite from freezing. The main use of the alpha compound is as an intermediate in the manufacture of dyes.

**Nitrous Ether.** This liquid, under its chemical name, ethyl nitrate, is mentioned under *Ethyl*.

**Nitrous Oxide** or **LAUGHING GAS.** The only inorganic gas which is serviceable as an anaesthetic agent. The gas was discovered by Priestley in 1772, but was first brought to general notice in 1800 by Sir Humphry Davy who discovered and made known the exhilarating properties which earned for it the name of laughing gas. It is colourless, heavier than air, and has a faint sweet smell. Nitrous oxide is probably the safest general anaesthetic known; anaesthesia develops rapidly, but is not deep unless high concentrations are used. The gas has proved of great value in dentistry. See *Anaesthesia*; *Nitrogen*.

**Niue** or **SAVAGE ISLAND.** Pacific island, a dependency of New Zealand. It was named by its discoverer, Capt. Cook, 1774. It is 350 m. S.E. of Samoa, and consists of upheaved coral arranged in two terraces 90 and 220 ft. above mean sea level respectively.

The native villages are all on the lower terrace. Banana and coconut are exported. Alofi is the chief village. The area is 100 sq. m. Pop. 4,271.

**Nivation.** In geology, the action of ice and snow on the land surface near and around an ice-sheet. The action includes frost shattering and removal of the broken debris by rain-wash or wind; and solifluxion (*q.v.*) which is the flow of surface soil as sludge when the snow melts but the melt water is unable to soak away because the ground below is still frozen. See *Coombe Rock*; *Glacier*; *Ice Age*.

**Nive.** River of Spain and France. It rises in N. Spain, and flowing through the Pyrenees joins the Adour at Bayonne; its length is 45 m. In the Peninsular War there were engagements along this

river Dec. 10-13, 1813. On Soult's retreat into Bayonne, after his defeat on the Nivelle, Nov. 10, 1813, Wellington placed his forces on either side of the river Nive. Soult made a sortie, Dec. 10, and launched a heavy attack against a portion of the British forces under Gen. Hope, but was held at bay. Engagements took place on the following days until Dec. 13, when Soult hurled a force of 35,000 men against Hill's body of 17,000. Wellington's timely arrival saved Hill, and Soult withdrew with heavy losses. See *Peninsular War*.

**Nivelle,** ROBERT GEORGES (1856-1924). A French general. Born at Tulle, Oct. 15, 1856,



R. G. Nivelle,  
French general

joined the French army in 1878. On the outbreak of the First Great War in command of an artillery regiment, he was successively promoted brigadier-general and general of division. Placed at the head of the 2nd army, he played a great part in the battle of Verdun, being, as the result of his success, chosen to succeed Joffre; and on Dec. 12, 1916, he was appointed c.-in-c. of the armies of the N. and the N.E. In April, 1917, he planned and conducted a powerful offensive in the Craonne-Reims area; but the losses were so heavy as to discount utterly the small gains made. The French govt. called off the offensive and Nivelle was superseded by Pétain. In Dec., 1917, he was appointed c.-in-c., N. Africa. Retiring in 1921, he died March 23, 1924. See *Aisne Battles*; *Verdun*.

**Nivelles** (Flemish, Nyvel). A town of Belgium, in the prov. of Brabant. It lies 18½ m. by rly. S. of Brussels, on the Thines, is a rly. junction, and has metal works, paper manufactures, and tobacco and furniture industries. The Romanesque church of S. Gertrude was founded in the 11th century. Pop. 12,500.

**Niven,** DAVID (b. 1909). British film actor. The son of Gen. W. G. Niven, he was born at Kiriemuir, Angus March 1, 1909, and educated at Stowe and Sandhurst. After adopting a military career for some years,



David Niven,  
British film actor



he went to the U.S.A. and appeared in M.G.M. films. He came to the fore as Edgar Linton in *Wuthering Heights*, 1939. During the Second Great War he was in such outstanding British pictures as *The First of the Few* and *The Way Ahead*, and then starred in *A Matter of Life and Death*, 1946, also in the British film *Bonny Prince Charlie*, 1948.

**Niven**, **FREDERICK JOHN** (1878-1944). British author. Born at Valparaiso, March 31, 1878, he was educated in Glasgow at Hutcheson's grammar school and the school of art. Beginning with an adventure story, *The Lost Cabin Mine*, 1908, he published books on travel, poems, and novels, including *Justice of the Peace*, 1914, which later gained him an American reputation. One of his best-known stories was *Mrs. Barry*, 1933, describing the life of a Glasgow tenement landlady. He lived much in British Columbia and travelled widely throughout the New World, recording some of his journeys in *Coloured Spectacles*, 1938. Niven died at Vancouver, Jan. 30, 1944.

**Nivernais**. Province of France, represented since 1792 by the dept. of Nièvre (*q.v.*) and part of Yonne. It lay contiguous with Berry, Orléanais, Burgundy, and Bourbonnais, and became a county in the late 9th century. Otto William of Burgundy being its first hereditary count. Held by the rulers of Flanders, 1280-1384, it passed to Burgundy and then to Cleves. A duchy from 1538, it was held by the Gonzague family from 1562 until bought by Mazarin, 1659, and given by him to his nephew, Jules Philippe Mancini. Its capital was Nevers. The Nivernais canal (109 m.), constructed 1784-1842, joins the rivers Loire and Yonne, passing from Decize to Auxerre.

**Nivôse**. Fourth month of the year as rearranged during the French Revolution. It began on Dec. 21 or 22, and the word means the month of snow.

**Nixie**, **NIX**, or **NICK**. Water sprite in the folklore of the peoples of N. Europe. The name occurs in various forms in German, Danish, Swedish, Icelandic, and English legend. It was often regarded as malignant, and its appearance presaged shipwreck and drowning. In its Anglo-Saxon form, *nicor*, it is mentioned in *Beowulf*, where several are slain by the hero. It has survived as one of the names used for the devil, Old Nick.

**Nizam** (Arab., administration). Title of the sovereign of the Indian



Noailles. Members of the French family. Left to right: Anne Jules, 1650-1708; Louis Antoine, 1651-1729; Adrien Maurice, 1678-1786

state of Hyderabad (*q.v.*). The first holder was Asaf Jah (d. 1748), who was styled *Nizam-ul-Mul* (administrator of the kingdom).

**Njörðr** or **Njörðr**. In Norse mythology, the god of the sea, and of seafaring and wealth. One of the race of the Vanir, he is husband of Skadhi and father of Freyr and Freyja. In the war with the Aesir he becomes a hostage. The German Hertha is his female counterpart.

**N.K.V.D.** Former name of the political police of the U.S.S.R., called successively Cheka, OGPU, N.K.V.D., and M.V.D. See OGPU.

**Noah**. O.T. patriarch. Son of Lamech and father of Shem, Ham, and Japheth, by divine command he made an ark in which he and his family were preserved during the Deluge (*q.v.*). The invention of wine is attributed to him (Gen. 6-9).

**Noah**, **THE BOOK OF**. One of the non-canonical O.T. Apocrypha or Pseudepigrapha (*s.e.* works written under an assumed name). It has not been preserved as an independent work, but fragments of it are incorporated in the Ethiopic Book of Enoch, and it is referred to in the Book of Jubilees (10, v. 13, and 21, v. 10). The work, which gives an account of the laws made by Noah for his children, would seem to have been written between 200 and 161 B.C.

**Noailles**. Name of a noble French family. Originating at the château of this name near Brive, Corrèze, the family gave its name to the town of Noailles, Oise, formerly called Longvillers. Antoine de Noailles (1504-62) was chamberlain to Francis I, admiral of Guienne, and ambassador to England, 1533-36; his brother François (1519-85), was bishop of Aix and ambassador to Venice, 1557, and to Constantinople, 1572. Anne Jules, duke of Noailles (1650-1708), a distinguished soldier, repressed Protestants in Languedoc, 1681, and was made marshal in 1693. Louis Antoine (1651-1729) was archbishop of Paris, 1695, and cardinal, 1700, and an opponent of the Quietists.

Adrien Maurice, 3rd duke (1678-1766), served in the wars of Louis

XV, and was an able general, finance president in 1715 and marshal of France, 1734, but was defeated at Dettingen, 1743. Louis, 4th duke (1713-93), was made marshal in 1775. His brother Philippe (1715-94), duke of Mouchy, an able soldier, also made marshal 1775, was guillotined with his wife, Jean François Paul, 5th duke (1739-1824), was a chemist, and his brother Emmanuel Marie Louis (1743-1822) a distinguished diplomat. Paul, 6th duke (1802-85), was an historian; Jules, 7th duke (1826-95), an economist and publicist.

**Noailles**, **ANNA COMTESSE DE** (1876-1933). French poet. Daughter of Prince Bibesco, she was born in Paris, Nov. 15, 1876, and in 1897 married a grandson of Jules, duc de Noailles. Her first volume of verse, *La Coeur Innombrable*, 1901, made an immediate impression, chiefly on account of its pagan voluptuousness. One of the greatest French poets of her time she excelled in passionate love poetry and in nature-poems notable for exotic intensity. Her best-known works included *L'Ombre des Jours*, 1902; *Les Vivants et les Morts*, 1913; *Les Forces Éternelles*, 1920; *Le Livre de ma Vie*, 1932. She died in Paris, April 30, 1933.

**Nobel**, **ALFRED BERNHARD** (1833-96). Swedish chemist. Born at Stockholm, Oct. 21, 1833, and educated in St.

Petersburg and in the U.S.A., he assisted his father, an inventor of considerable ability. During 1859-61 they devoted themselves to the study of explosives (*q.v.*), perfecting the manufacture of nitroglycerine. The improved explosive was called pyroglycerine, then glonoin oil, and later Nobel's blasting oil. The inconvenience of a liquid explosive led Nobel, in 1866, to mix the liquid with absorbent earth, forming dynamite. He settled in Paris in 1873, and shortly after this time he invented a still more powerful explosive, nitrogelatin or gelnignite. He died Dec. 10, 1896. A biography by H. Pauli appeared in 1948. See Nobel Prize.



Alfred B. Nobel, Swedish chemist

# NOBEL PRIZE: LIST OF AWARDS FROM ITS FOUNDATION, IN 1901, TO 1939

Details of the lives and work of most of the Nobel prizewinners will be found under their own names throughout this Encyclopedia. Any later awards, announced after the completion of this edition of the Encyclopedia, will be included under the heading Nobel Prize in the Novissima Verba section at the end of the final volume

Year	Physics	Chemistry	Medicine	Literature	Peace
1901	W. K. Röntgen (Ger.)	J. H. van't Hoff (Du.)	E. A. von Behring (Ger.)	R. F. A. Sully-Prudhomme (Fr.)	H. Dunant (Swiss)
1902	H. A. Lorentz (Du.)	E. Fischer (Ger.)	R. Ross (G.B.)	T. Mommsen (Ger.)	F. Passy (Fr.)
1903	P. Zeeman (Du.)	S. A. Arrhenius (Swed.)	N. R. Finsen (Dan.)	B. Björnson (Norw.)	E. Ducommun (Swiss)
1904	H. A. Becquerel (Fr.)	Sir W. Ramsay (G.B.)	I. P. Pavlov (Russ.)	F. Mistral (Fr.)	A. Gobat (Swiss)
1905	P. Lenard (Ger.)	A. von Baeyer (Ger.)	R. Koch (Ger.)	J. Rechegaray (Span.)	W. R. Cremer (G.B.)
1906	J. J. Thomson (G.B.)	H. Moissan (Fr.)	C. Golgi (It.)	H. Sienkiewicz (Pol.)	Institute of International Law
1907	A. A. Michelson (U.S.)	E. Buchner (Ger.)	S. Ramon y Cajal (Span.)	G. Carducci (It.)	B. von Suttner (Aust.)
1908	G. Lippmann (Fr.)	E. Rutherford (G.B.)	C. L. A. Laveran (Fr.)	R. Kipling (G.B.)	T. Roosevelt (U.S.)
1909	F. Braun (Ger.)	W. Ostwald (Ger.)	P. Ehrlich (Ger.)	R. Eucken (Ger.)	E. T. Moneta (It.)
1910	G. Marconi (It.)	O. Wallach (Ger.)	E. Metchnikoff (Can.)	S. Lagerlof (Swed.)	L. Renault (Fr.)
1911	J. D. van der Waals (Du.)	M. Curie (Fr.)	T. Kocher (Swiss)	P. Heyse (Ger.)	K. P. Arnoldson (Swed.)
1912	W. Wien (Ger.)	V. Grignard (Fr.)	A. Kossel (Ger.)	M. Maeterlinck (Belg.)	F. Bajer (Dan.)
1913	G. Dalén (Swed.)	P. Sabatier (Fr.)	A. Gullstrand (Swed.)	G. Hauptmann (Ger.)	A. M. F. Beernaert (Belg.)
1914	H. Kamerlingh-Onnes (Du.)	A. Werner (Swiss)	C. Richet (Fr.)	R. Tagore (India)	P. d'Estournelles de Constant (Fr.)
1915	M. von Laue (Ger.)	T. W. Richards (U.S.)	R. Barany (Aust.)	No award	International Peace Bureau
1916	W. H. Bragg (G.B.)	R. Willstätter (Ger.)	No award	R. Rolland (Fr.)	T. M. C. Asser (Du.)
1917	W. L. Bragg (G.B.)	No award	No award	C. G. V. von Heidenstam (Swed.)	A. H. Fried (Aust.)
1918	No award	No award	No award	K. Gjellerup (Dan.)	E. Root (U.S.)
1919	C. G. Barkla (G.B.)	No award	No award	H. Pontoppidan (Dan.)	H. La Fontaine (Belg.)
1920	M. Planck (Ger.)	F. Haber (Ger.)	No award	No award	No award
1921	J. Stark (Ger.)	No award	J. Bordet (Belg.)	C. G. V. von Heidenstam (Swed.)	No award
1922	C. E. Guillaume (Swiss)	W. Nernst (Ger.)	A. Krogh (Dan.)	K. Spitteler (Swiss)	Woodrow Wilson (U.S.)
1923	A. Einstein (Ger.)	F. Soddy (G.B.)	No award	K. Hamsun (Norw.)	L. Bourgeois (Fr.)
1924	N. Bohr (Dan.)	F. W. Aston (G.B.)	A. V. Hill (G.B.)	A. France (Fr.)	K. H. Brantlin (Swed.)
1925	R. A. Millikan (U.S.)	F. Pregl (Aust.)	O. Meyerhof (Ger.)	J. Benavente (Span.)	C. L. Lange (Norw.)
1926	K. M. G. Siegbahn (Swed.)	No award	F. G. Banting (Can.)	W. B. Yeats (Irish)	F. Nansen (Norw.)
1927	J. Franck (Ger.)	R. Zsigmondy (Aust.)	J. J. R. Macleod (Can.)	No award	No award
1928	G. Hertz (Ger.)	The Svedberg (Swed.)	W. Einthoven (Du.)	W. Reymont (Pol.)	No award
1929	J. B. Perrin (Fr.)	H. Wieland (Ger.)	No award	G. B. Shaw (G.B.)	A. Chamberlain (G.B.)
1930	A. H. Compton (U.S.)	A. Windaus (Ger.)	J. Fibiger (Dan.)	G. Deledda (It.)	C. G. Dawes (U.S.)
1931	C. T. R. Wilson (G.B.)	H. K. A. S. von Euler-Chelpin (Swed.)	J. W. von Jauregg (Aust.)	H. Bergson (Fr.)	A. Briand (Fr.)
1932	O. W. Richardson (G.B.)	A. Harden (G.B.)	C. J. H. Nicolle (Fr.)	S. Undset (Norw.)	G. Stresemann (Ger.)
1933	L. V. de Broglie (Fr.)	F. Fischer (Ger.)	C. Eijkman (Du.)	T. Mann (Ger.)	F. Buisson (Fr.)
1934	Sir C. V. Raman (India)	F. Bergius (Ger.)	F. G. Hopkins (G.B.)	No award	L. Quidde (Ger.)
1935	No award	C. Bosch (Ger.)	K. Landsteiner (U.S.)	No award	No award
1936	W. Heisenberg (Ger.)	I. Langmuir (U.S.)	O. Warburg (Ger.)	Sinclair Lewis (U.S.)	F. B. Kellogg (U.S.)
1937	E. Schrödinger (Aust.)	No award	Sir C. S. Sherrington (G.B.)	E. A. Karlfeldt (Swed.)	N. Söderblom (Swed.)
1938	P. A. M. Dirac (G.B.)	H. C. Urey (U.S.)	E. D. Adrian (G.B.)	John Galsworthy (U.S.)	Jane Addams (U.S.)
1939	No award	No award	T. H. Morgan (U.S.)	No award	N. Murray Butler (U.S.)
				I. A. Bunin (Russ.)	No award
				L. Pirandello (It.)	Sir N. Angell (G.B.)
				No award	A. Henderson (G.B.)
				E. O'Neill (U.S.)	C. von Ossietzky (Ger.)
				B. M. du Gard (Fr.)	C. de S. Lamas (Arg.)
				Pearl S. Buck (U.S.)	Viscount Cecil (G.B.)
				F. E. Sillanpää (Finn.)	No award
					Nansen Office
					No award

**Nobel Prize.** Series of five prizes which may be awarded annually to men and women who have contributed to the development of (1) physics, (2) chemistry, (3) medicine or physiology, (4) literature of an idealistic tendency, (5) the cause of peace. The prizes, sums of money which vary slightly from year to year but have each an average value of £8,000, are awarded from the income of a trust fund of £1,750,000 established by the will of Alfred Nobel (*q.v.*). The fund is administered by the Nobel Institute, Stockholm, the board consisting of 15 members appointed by the awarding authorities and a chairman named by the Swedish govt. Awarding authorities are the Swedish academy of science, the Stockholm faculty of medicine, the Swedish academy of literature, and a govt. committee for the peace prize.

Awards are not necessarily made to individuals, but may be given to organizations. Marie Curie, who shared with her husband the physics prize in 1903 and received that for chemistry in 1911, is the only individual awarded two prizes. First awards were made in 1901. Under the Nazi régime, German recipients were not permitted to accept the awards. The accompanying table lists all Nobel prize-winners from 1901 until 1949.

**Nobile, UMBERTO** (b. 1885). Italian airman and aeronautical engineer. Born at Lauro, Avellino, Jan. 21, 1885, he constructed dirigible airships of the semi-rigid type for the Italian government, and was director of the military airship factory at Rome from 1919 to 1929. He designed and commanded the dirigible Norge which flew from Rome to Alaska via the North Pole in the Amundsen-Ellsworth-Nobile expedition of 1926. For his part in this achievement he was promoted general. In 1928 he led an Italian expedition to the North Pole in the dirigible

Italia, but had to land; a sensational rescue was carried out by the Russian ice-breaker Krassin. In 1929 a court of inquiry held him responsible for the accident, and he resigned his post to become professor at the Naples engineering school. He was appointed deputy-chief of Soviet Russian airship construction, 1932, by permission of the Italian government; but in 1936 he was recalled. In 1939 he went to America, where he became head of the engineering department of a school of aeronautics. He wrote several books on his polar flights.

**Nobility** (Lat. *nobilis*, from *noscere*, to know). Literally, the state of being noble. In a narrower sense it suggests belonging to an old and noted family, and is used for the peers and their relatives as a body. See *Peerage*.

**Noble.** Term used for one who is regarded as of superior birth. It is of Roman origin, and is also found among Teutonic peoples, where the word *adel*, or *ethel*, may be translated noble. Some held the belief that the nobles were the descendants of the gods. In the class distinctions that were accentuated by the feudal system, the nobles formed a separate class in most European countries, becoming one of the estates of the realm where these arose. In England they formed the house of lords. Today a noble simply means a peer, and includes sometimes the relatives.

**Noble.** Obsolete English gold coin, first struck by Edward III.



Noble. Obverse and reverse of gold coin of Edward III. Actual size,  $1\frac{1}{2}$  in. diameter

Its original value was 6s. 8d. It was also coined as  $\frac{1}{2}$ - and  $\frac{1}{4}$ -nobles.

**Noble, SIR ANDREW** (1832-1915). A British physicist. Born at Greenock, Sept. 15, 1832, he entered the Royal Artillery, 1849, became secretary to the committee on rifled cannon, 1858, to that on plates and guns, 1859, and a member of a number of other committees on explosives and ordnance. In 1860 he joined Sir W. G. Armstrong, and began a scientific investigation into the effects of various powders. His investigations had a revolutionary effect on the construction of big guns.

He devised the Noble pressure gauge for estimating the pressure developed in the chamber of a gun by the propellant charge. He also invented the chronoscope, an instrument for measuring minute intervals of time. In 1880 he received the gold medal of the Royal Society. Made K.C.B. 1893, and bart. 1902, he died Oct. 22, 1915.

**Noce Dam.** Dam across the Noce river in the Italian province of Trento. Begun in 1939, the barrage is 460 ft. long and creates a lake 5 m. long. The overflow drives turbines generating 250 million kW. annually.

**Nocera Inferiore** OR DE PAGANI. City of Italy, in the prov. of Salerno. It stands on the Sarno, 23 m. by rly. S.E. of Naples. The city has a ruined castle. Pop. 20,000.

**Noctiluca** (Lat. *nox*, night; *lucere*, to shine). Genus of marine flagellate infusorians. They are circular, about 1-50th of an in. in diameter, and have a whip-like process by means of which they swim. They are luminescent, and occur in vast swarms in the British seas.

**Nocturn.** In the R.C. breviary, office appointed to be recited during the night, forming part of the office of matins. The nocturns probably represent a division of the vigils, originally recited at midnight, into two offices on ordinary days and three on Sundays. They consist mainly of psalms and lessons. See *Matins*.

NOBEL PRIZE: LIST OF AWARDS FROM 1943 (NONE MADE 1940-42)

Year	Physics	Chemistry	Medicine	Literature	Peace
1943	O. Stern (U.S.)	G. Hevesy (Hung.)	H. Dam (Dan.) E. A. Doisy (U.S.) J. Erlanger (U.S.) H. S. Gasser (U.S.) Sir A. Fleming (G.B.) Sir H. W. Florey (G.B.) O. B. Chain (Ger.) H. J. Muller (U.S.)	No award	No award
1944	I. I. Rabi (U.S.)	O. Hahn (Ger.)		J. V. Jensen (Dan.)	International Red Cross
1945	W. Pauli (Aust.)	A. Virtanen (Fin.)		G. Mistral (Chile)	C. Hull (U.S.)
1946	P. W. Bridgman (U.S.)	J. B. Sumner (U.S.) W. M. Stanley (U.S.) J. H. Northrop (U.S.) Sir R. Robinson (G.B.)		H. Hesse (Swiss)	E. G. Balch (U.S.) J. R. Mott (U.S.)
1947	Sir E. Appleton (G.B.)		Prof. and Mrs. C. F. Cori (U.S.) B. Houssay (Arg.) P. Muller (Swiss)	A. Gide (Fr.)	Society of Friends
1948	P. M. S. Blackett (G.B.)	A. Tiselius (Swed.)		T. S. Eliot (G.B.)	No award
1949	H. Yukawa (Jap.)	W. F. Glauque (U.S.)	W. R. Hess (Swiss) A. Moniz (Port.)	No award	Lord Boyd-Orr (G.B.)

**Nocturne** (Ital. *notturno*). A musical composition, usually of a placid character. Some nocturnes are of the nature of serenades, others are rather music to accompany sleep scenes, such as Mendelssohn's *Notturno* in the music to *A Midsummer Night's Dream*. John Field (1782-1837) probably first used the title for his short, romantic pianoforte pieces, and Chopin adopted it for more famous ones. Whistler adopted the name to describe certain of his paintings representing twilight or night impressions e.g. *Nocturne, blue and gold—Battersea Bridge*.

**Noddy** (*Anous solidus*). Small tern found in the tropics. It is blackish in colour, with a light patch on the forehead, and distinguished by its graduated tail and the shortness of the middle toe. It breeds in vast colonies off the coasts of Florida and S. America, the nest being a bracket of seaweed projecting from the rocks, one nest serving for hundreds of years.

**Node**. In astronomy, one of the two points in which the orbit of a planet or a moon intersects the ecliptic. The one at which the body passes to the N. of the ecliptic is termed the ascending, the other the descending node. The celestial longitude of the ascending node is one of the astronomical elements which determine the orbit of a planet. The nodes of the planets, on account of planetary perturbations, move slowly round the ecliptic backwards, the period for Mercury, for example, being 166,000 years.

A node in acoustics is the point, line, or surface of an interference pattern at which the amplitude of the sound pressure or particle-velocity is zero. Hence the use of distinguishing terms pressure node and velocity node. As complete interference seldom takes place in practice, the term node is generally associated with minimum rather than zero amplitude.

**Noel-Baker, PHILIP J.** (b. 1889). British politician. Educated at Bootham school, York, in America, and at King's, Cambridge (where he won a running Blue), in 1914 he became vice-principal of Mansfield College, Oxford. He served in ambulance units during the First Great War, and was on the League of Nations secretariat until 1922. Cassel professor of international relations at London university, 1924-29, he was an authority on disarmament. Labour M.P. for Coventry, 1929-31, he was parliamentary private secretary to the foreign minister.

He sat for Derby, 1936-50, then for S. Derby. In 1942 he became parliamentary private secretary to the minister of war transport, and in the Labour administration from 1945 was successively minister of state, secretary for air, secretary for commonwealth relations, and minister of fuel and power. He wrote *The Juridical Status of the British Dominions in International Law*, 1929.

**Nogent-sur-Marne.** Town of France, virtually a residential suburb of Paris. In the dept. of Seine, it is 6 m. E. from the city proper, being close to the Bois de Vincennes. It stands on a hill above the Marne, and rlys. and buses connect it with the capital. It has a Gothic church, and a monument to Watteau, who died here. The industries include chemical factories and pottery works. Pop. 21,547. **Nogent-sur-Seine**, 35 m. N.W. of Troyes, in Aube dept., has a notable church, S. Laurent.

**Nogués, AUGUSTE** (b. 1876). French soldier. Born in Hautes-Pyrénées department, he was trained at St. Cyr. He served in the First Great War and the Riff campaign of 1924-26. From 1936 he was resident-general of Morocco and at the outbreak of the Second Great War assumed command of all French forces in N. Africa. He adhered to the Vichy régime, but in Oct., 1940, warned Germany, Italy, and Spain that French N. Africa would not surrender to any invading force. Having offered resistance to the Allied landings in 1942, he later compromised with Gen. de Gaulle and became a member of the French imperial council. He resigned June 5, 1943, and went to Portugal. In 1947 he was sentenced in his absence to 20 years' imprisonment and loss of civil rights.

**Noise.** Any disorganised sound, as distinct from the organised sounds of music. Advance of mechanised civilization has been accompanied by a crescendo of noises, many of which have become public nuisances, and certain types of noises are now controlled by legislation; e.g. motor cycle exhausts, and the unnecessary sounding of motor horns. The Noise Abatement League has obtained compulsory control of the noise emitted from other machines and processes.

Sound "intensity" is measured in bels and decibels, which represent the amount of physical energy in the sound waves. They are based on a logarithmic scale, so that if the energy is increased ten-

fold the intensity is said to increase by one bel. Zero is fixed at a level (barely audible) where the acoustical pressure is 0.0002 dynes per sq. cm. All sounds of the same intensity do not seem equally loud to the ear; "loudness" is therefore measured by comparison with a pure tone (1,000 c/s) which can be varied in intensity till it matches. The units are phons (*q.v.*). The loudest everyday noise is emitted by an aeroplane propeller; next come a boiler factory, a riveting machine, and, fourth, a clap of thunder. The explosion of Krakatoa in 1883 is said to be the loudest noise ever heard.

**Nola.** City of Italy, in the prov. of Naples. Situated 21 m. E.N.E. of Naples, on the rly. to Baiano, it has a Gothic cathedral and remains of the 4th century church of S. Felix. Built on the site of a city founded probably by Ausonians or Etruscans, it was taken by Rome in 313 B.C. The emperor Augustus died here. Pop. 17,000.

**Nollekens, JOSEPH** (1737-1823). British sculptor. Born in Soho, Aug. 11, 1737, the son of Joseph Francis Nollekens, a landscape painter, called Old Nollekens, he studied at Shipley's school and under Scheemakers. After ten years in Rome, 1760-70, he settled in London, and was elected A.R.A. in 1771 and R.A. in 1772. His works included portrait busts of George III, Wellington, William Pitt, and many other celebrities. He died in London, April 23, 1823. His eccentric appearance and character are described in J. T. Smith's *Nollekens and his Times*, new ed. 1949.

**Nomad** (Gr. *nomades*, pastoral rangers). Term denoting peoples who range from place to place in quest of sustenance. They may hunt afoot, like the Australian aborigines and the Bushmen, or on horseback, like the pampas Indians, or they may be quasi-industrial van-dwellers, like gipsies. The term, however, denotes specifically pastoral tent-dwellers, whose economic life and culture were developed on Eurasian steppes and African grasslands along the margins of cultivable lands or deserts. See *Beduins*; *Ethnology*; *Kirghiz*.

**No Man's Land.** Term applied to a piece of unused or unowned land. A plot of waste land outside London Wall where executions took place was so designated in the 14th century. In the 18th century the term was used for a space for storing ropes, blocks, etc., on ships. In the First Great War it was used for the terrain between

the front-line trenches of the opposing forces.

**Nome** (Gr. *nomos*, district). Territorial division in ancient Egypt. In the XIIth dynasty there were 20 in Lower Egypt and 22 in Upper Egypt and 13 in the Sudan. There were probably 100 under the new empire, and 60 in Roman times. Each had its civil capital, the residence of the hereditary nomarch (*heg*), and the seat of the patron deity. Nome is also, in modern Greece, the name for a province. *See* Egypt.

**Nome.** City of Alaska, U.S.A., on Seward Peninsula. It stands on the N. shore of Norton Sound, and gold was first worked here in 1899. The pop. increased to 20,000 in the following years, when the gold yield of the region rapidly rose. Later it declined, and by 1939 the pop. had sunk to 1,559.

**Nominalism** (Lat. *nomen*, name). A term in scholastic philosophy, opposed to realism. It was first introduced by Roscellinus at the end of the 11th century. Its upholders asserted that genera and species, the universal notions, had no real existence, being merely sounds and words, products of abstraction; the individual alone has a real existence. Long before, Antisthenes the Cynic had declared that he could see a horse, but not horseness (the concept of horse). Realism won the day, but in the 14th century Occam again brought nominalism into favour. Abelard's conceptualism was a kind of middle term between nominalism and realism. *See* Philosophy; Realism.

**Nominative** (Lat. *nominare*, to name). In inflexional languages, the name given to the case indicating the subject or attribute. In the Indo-European group the ending of the nominative singular masculine and feminine was -s (*equus*, *vis*) or the simple stem (*pater*, *musa*); of the neuter -m, or the simple stem (*iugum*, *mare*); in the plural *os* (*es*), *oi* (*i*), *ai* (*ae*) for masculine and feminine (*patres*, *oves*, *vici* for *vici*, *musae* for *musae*). It is probable that the nominative suffix is in its origin pronominal. The nominative is known as *casus rectus*, the upright, independent case, which is in no way subordinate to the other elements of the sentence.

**Non-belligerency.** Term used to describe an attitude of friendly neutrality adopted by a country which, while not taking an active part in hostilities between other countries, gives moral support to the side with which she has racial or political affinities. Non-belliger-

ency does not infringe international law, since a neutral is entitled to sympathise with a belligerent, provided she does not commit acts contrary to her duty of impartiality. Until she attacked France in 1940, Italy adopted non-belligerency in favour of Germany in the Second Great War. *See* Neutrality.

**Non-combatant.** Term for those who, in time of war, are not treated as fighting men, either by their own people or by the enemy. In land and sea warfare it is still possible to maintain some distinction. Non-combatants, who include certain members of the forces, e.g. chaplains, doctors, and clinical workers, as well as civilians, may not, according to international law, be directly attacked, although those attached to the armed forces are liable to injury from any general attack. Hague air warfare rules were drawn up in 1923, but never became binding, as they were not ratified. These prohibited bombing for the purpose of terrorising civilians or of injuring non-combatants.

**Non-commissioned Officer.** Soldier, marine, airman, or member of the Women's Royal Army Corps or Women's Royal Air Force of rank above private and below warrant officer. The four principal non-commissioned ranks in the British Army, Women's Royal Army Corps, and Royal Marines are lance-corporal, corporal, sergeant, and staff sergeant. In the artillery the lance-corporal is called a lance-bombardier and the corporal a bombardier. The three non-commissioned ranks in the R.A.F. and W.R.A.F. are corporal, sergeant, and flight sergeant. All non-commissioned ranks are described separately in this Encyclopedia. N.C.O.s in the Royal Navy are called petty officers.

**Nonconformity.** Name for a religious movement in opposition to, or in independence of, an established Church. Such a movement can, of course, occur only in countries where an established Church exists, and in general speech the word is confined to England.

The publication of the first prayer book of Edward VI, and the Act of Uniformity which required its use in all churches offended the Puritan party in the Church of England and forced them to a statement of their position which was virtually identical with that of a free church in a free state. Under Elizabeth two parties came into being: the Presbyterians, led by Cartwright, who rejected episcopacy but retained

their belief in the establishment; and the Separatists, led by Robert Browne (*g.v.*), who advocated the setting up of independent and autonomous churches. Supporters of both sections were regarded by the law as dissenters and subjected to pains and penalties. A compromise suggested by the Puritans at the Hampton Court conference, 1604, being rejected, the cleavage between the establishment and both the Puritans and Separatists became more pronounced. It was further accentuated by the policy of Archbishop Laud, who insisted on the divine right and apostolic succession of the episcopate. This drove together in a common interest the various types of nonconforming Christians. The religious intolerance of Charles I was one of the chief causes of the Civil War, which was an uprising as much against prelatry in the church as against despotism in the state. The first period of the war saw the triumph of Presbyterianism, through the Westminster Assembly and the Long Parliament. But the country was never Presbyterian at heart, and the Independents stood out against the attempt to make it so.

Charles II undertook to maintain religious toleration, but failed to keep his promise. The Act of Uniformity, which required of all ministers an unfeigned assent and consent to the book of common prayer, was intended to drive the Puritans out of the church. In this it succeeded, some 2,000 ministers being ejected. Dissenting chapels were instituted all over the country, but the Conventicle Act of 1664 made it a penal offence to attend their services, and the Five Mile Act prohibited their ministers from exercising their vocation within five miles of any corporate town, also from keeping schools. Yet Nonconformity, holding its meetings in secret, so continued to flourish that by 1672 Charles had to admit the failure of persecution.

The Toleration Act of 1689 did not repeal previous legislation against Nonconformists, but did away with the penalties of disobedience. Under it, 82,418 licences for meeting-houses were taken out in the next ten years.

The 18th century saw Nonconformity engaged in a struggle for existence, suffering repeated hostile measures, but gradually escaping some of its disabilities. The Occasional Conformity Act, 1711, effectively excluded Nonconformists from the country's public life, and the Schism Act, 1714, from all



opportunities of higher education ; but both were repealed in 1719. Under the house of Hanover a more tolerant spirit prevailed.

The 19th century witnessed a gradual but sure process of emancipation. The Conventicle Act, the Five Mile Act, and others were repealed in the first quarter of the century (though the original Act of Uniformity still remains). At the same time began a campaign for the disestablishment of the church, successful so far as Ireland (1869) and Wales (1920) were concerned. From 1871 Nonconformists were once again admitted to the ancient seats of learning. A further advance was marked by the founding of the Free Church Council (*q.v.*) in 1892, and by the tendency since that time to speak of the Nonconformist bodies as a whole more accurately as the Free Churches. See Baptists; Congregationalism; Disestablishment; Methodism; Society of Friends, etc.

**Nones** (Lat. *nonus*, ninth). The fifth day of the month in the Roman calendar, but in March, May, July, and Oct. the seventh day. See Calendar; Calends; Canonical Hours.

**Nonesuch Press.** British publishing firm founded 1923 by (Sir) Francis Meynell, who remained director of publications after the amalgamation of the organization with Desmond Harmsworth in 1932. It specialized in limited editions of classics designed to use mechanical means of book printing, illustration, and production to the best advantage. The Nonesuch Shakespeare, edited by Herbert Farjeon, was outstanding among its many notable productions.

**Non-Intervention.** Term used to describe the official policy of European powers in the Spanish civil war of 1936-39. They agreed not to supply arms or to send troops to either of the contending Spanish parties, and a non-intervention committee was set up in London to enforce the agreement. International control officers at ports and frontier posts examined men and goods in transit, while a naval patrol operated along the Spanish coasts. Nevertheless large quantities of war material and thousands of trained men infiltrated into Spain to assist one side or the other. The principal offenders were Russia, supporting the republicans, and Italy and Germany, who eventually made possible Gen. Franco's victory. The non-intervention committee ceased to function before the end of the war. See Spanish Civil War.

**Nonjurors.** Name given to a number of clergymen of the Church of England who refused to take the oath of allegiance to William and Mary in 1689. Their contention was that they had already taken the oath to James II and could not transfer their allegiance to another sovereign at the bidding of parliament. In 1690 they were deprived of their livings.

The nonjurors included William Sancroft, archbishop of Canterbury, Thomas Ken, and several bishops, as well as the scholars William Sherlock and Jeremy Collier. Later they were joined by William Law. There were also a few laymen, Henry Dodwell and Henry Hyde, earl of Clarendon, among them. Altogether they numbered about 400. When deprived they held services of their own, and kept up an episcopal succession, but gradually died out. See Divine Right; Jacobites.

**Nonpareil** (*Passerina ciris*). Cage bird, also known as the painted bunting. It is a summer migrant of the S. United States, which winters in Central America. The hen is green above and yellow below, but two-year-old cocks have the head, neck, and upper part of the wings a bright blue, a yellow back shading into green behind, whilst the underparts and the rump are bright scarlet.

**Nonpareil.** Name of printing type. Half the size of pica, it is one size smaller than minion, and one size larger than pearl or agate, and is also called 6-point. Twelve lines make an inch.

**Nonsuch.** Name given by Henry VIII to a palace which he built between Cheam and Ewell, Surrey. Begun in 1538 and nearly completed in 1547, it was sold by Mary to the earl of Arundel, who finished it, but Elizabeth bought

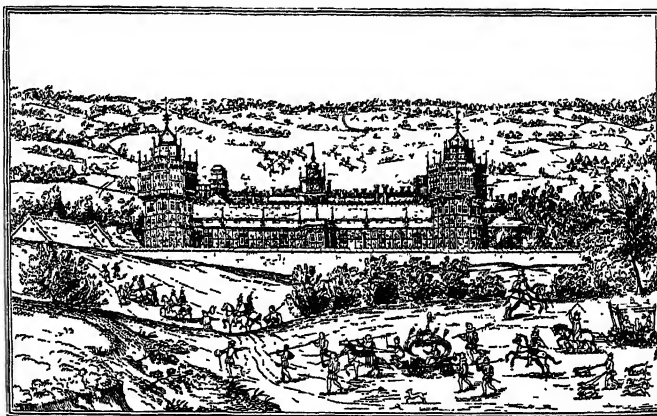
it back and in her time and that of the first three Stuarts it was a royal residence. Charles II gave it to the duchess of Cleveland, who sold it, and it was pulled down about 1680. Nothing of the palace remains.

On Old London Bridge was a remarkable structure called Nonsuch or Nonesuch House. It stood on the 7th and 8th arches from the Southwark end, was constructed entirely of wood, and is said to have been brought over from Holland piece by piece, and to have been put together by dovetailing and pegs without the use of a single metal nail. Built about 1580, it was taken down about 1757. See London Bridge.

**Noodles** (Fr. *nouilles*). Rich form of macaroni made of flour, eggs, and butter, rolled thin, and, three or four layers being superimposed, cut very fine and separated.

**Noon.** Twelve o'clock, the time at which the sun reaches its maximum altitude during the day. Two kinds may be distinguished: apparent noon occurs when the true sun crosses the observer's meridian; mean noon is similarly related to the fictitious mean sun (see Equation of Time). They are respectively the noons given by a sundial and by a clock, and may differ by as much as 16 mins. Civil or legal noon will differ from local noon at a place as the latter's longitude differs from that of the standard meridian. Thus local mean noon in Cornwall occurs at about 12.20 p.m. G.M.T.

**Noon, (Sir) FIROZKHAN** (b. 1893). Indian lawyer and politician. Born at Lahore May 7, 1893, he was educated at Chiefs College there and Wadham College, Oxford. Advocate of the Lahore high court from 1917, in 1920 he was



Nonsuch. The Surrey palace built by Henry VIII. From a print of 1582

elected to the Punjab legislative council, and in 1927 became minister for local self-government in the prov., and minister for education, 1931-36. He was high commissioner for India in the U.K., 1936-41, defence member of the viceroy's executive council for India, 1942-45, Indian representative in the British war cabinet, 1944-45, and Indian delegate to the San Francisco conference (*q.v.*). In Sept., 1945, he resigned his post as defence member to return to politics as a member of the Muslim League (*q.v.*). Sir Firoz Khan, who had been knighted in 1933, renounced his titles and honours in 1946 as a protest when it seemed possible that Pakistan would not be created on the transfer of power in India. He became gov. of E. Bengal, 1950. He published *Canada and India*, 1939; *Wisdom from Fools*, 1940; *Scented Dust*, 1941.

**Nootka.** Group of American Indian tribes on the W. coast of Vancouver Island, British Columbia. Numbering a few hundreds, they form—with the Kwakiutl—the Wakashan stock, and are allied to the Makah of the adjacent Washington coast. Their rectangular timber houses are decorated with paintings of fantastic human and animal figures.

**Nootka Sound.** Fjord on the W. coast of Vancouver Island, British Columbia. It is 6 m. wide, with a minimum depth of 250 ft. Three arms stretch inland, 7, 14, and 18 m. respectively. Nootka Island lies W. of the sound, with Esperanza Inlet N. of it. Nootka settlement is on the S. point.

This settlement was founded in the 18th century by some English merchants, who traded with China. In 1789-90, three of their ships were seized by some Spaniards. The British government asked for redress, to which Spain replied by claiming Nootka for herself. Both countries and their allies prepared for war, but the French national assembly was against it, and negotiations were begun. On Oct. 28, 1790, a treaty was signed by which Spain surrendered all her claims.

**Nō Plays.** Japanese dramatic entertainment. One of the oldest and most elementary forms of Japanese drama, these plays rely much on the visual aids of pantomimic gesture and traditional costume. As originally conceived, they were short lyrical episodes, staged by small private companies travelling from house to house. The characters seldom exceeded five, and the scenery, though highly decorative, was reduced to a minimum. Later

the cast was augmented by a chorus, orchestra, and dancers. There are 250 plays in the repertory of the Nō drama, divided into five classes: (1) the *waki-nō*, dealing with Buddhist deities; (2) the *shura-nō*, with the ghosts of departed warriors; (3) the *kazura-nō*, noble ladies portraying the chief characters; (4) the *genzai-nō*, or modern drama of human appeal; (5) drama of demons and goblins. Okina, the sun-goddess, always appears in the prologue.

**Norbiton.** District in the bor. of Kingston-upon-Thames, Surrey, England. It has a rly. station 12 m. S.W. of London. S. Peter's is the chief church. Pop. 13,620.

**Norbury.** Residential district of the bor. of Croydon, Surrey, England. It is 7 m. S. of London, and connected with the metropolis by rly., tram, and bus. Here are the links of North Surrey golf club. Pop. 15,538.

There is a Norbury in Derbyshire, 7 m. N.N.E. of Uttoxeter, on the Staffs border, with a rly. station. It has an old church, S. Mary's, partly of the 14th century, with monuments to the Fitzherberts—remains of whose 14th century hall are seen—and is supposed to be the Norbourne of George Eliot's Adam Bede. Pop. 354.

Norbury Park, with the Druid's Grove, is near Box Hill, Surrey.

**Nord.** Dept. of France. The frontier prov. between France and Belgium, it runs S.E. from the English Channel to the Ardennes, and is divided into two parts connected by a wedge of land 5 m. wide. It has an area of 2,228 sq. m., and is watered by the Schelde, Scarpe, Lys, and Sambre. The chief cities and towns, nearly all known for manufactures, are Dunkirk, Hazebrouck, Lille (the capital), Douai, Valenciennes, Roubaix, and Cambrai. Its minerals include coal, iron, lead, and bitumen. In the S. half took place some of the fiercest fighting during 1914-18, and the B.E.F. fought here in 1940. Pop. 1,917,452. See Canal du Nord.

**Nordau,** MAX SIMON (1849-1923). German-Hungarian author.

A Jew by family, his real name Sudfeld, he was born at Budapest, July 29, 1849, studied medicine, travelled widely, and having settled in Paris, practised from 1880 as a physician. Nordau's nov-

els and dramas were written to illustrate his social theories; among the novels being *The Drones Must Die*, 1893, and among the dramas, *The Right to Love*, 1894, and *Morganatic*, 1904. He is better known by analytical studies of contemporary society, *The Conventional Lies of Civilization*, 1884; *Paradoxes*, 1885, 1886; *The Malady of the Century*, 1887; *Degeneration*, 1892. The works named have been rendered into English. Nordau died Jan. 22, 1923.

**Nordenskiöld,** NILS ADOLF ERIK, BARON (1832-1901). Finnish explorer. Born Nov. 18, 1832, and educated at the University of Helsinki, he studied mineralogy and mining. He moved to Stockholm in 1857, and made valuable geological discoveries in Spitsbergen. For a time director of the royal museum at Stockholm, in 1861 and 1864 he made further expeditions there, and in 1868 he made a polar expedition, reaching 81° 42' N. He accomplished the N.E. passage in the Vega in 1878-80. He died Aug. 12, 1901. His works in English include *The Voyage of the Vega around Asia*, 1881; *The Second Swedish Expedition to Greenland*, 1885.



N. A. Nordenskiöld, Finnish explorer

His nephew, Nils Otto Gustaf Nordenskiöld (1869-1928), made a scientific exploration of the Magellan Straits and Patagonia, 1895-97, and of Alaska, 1898, and commanded the Swedish expedition of 1901-04 which discovered Oscar II Land.

**Nordenskiöld Sea.** Section of the Arctic Ocean, N. of Siberia, between the Taimyr peninsula and the New Siberia islands. It receives the waters of the Lena, Olenek, and Khatanga rivers, and was named after Nils Nordenskiöld, who navigated it in 1878.

**Norderney.** Island of W. Germany, one of the Frisian group. It is about 8 m. long and 1 m. wide, and is in the *Land of Lower Saxony*. It was used by the Germans as a seaplane base in the Second Great War and repeatedly bombed by the R.A.F. Norderney was occupied by the R.N. in May, 1945. Pop. (1950) 7,200. See Frisian Islands.

**Norddeutscher Lloyd.** German shipping company, one of the greatest in the world. Founded in



Max Nordau, German-Hungarian author

1857 at Bremen, it ran next year the first service from Germany to New York, with four steamers, won the blue riband in 1884, and started lines to S. America in 1875 and the Far East and Australia in 1886. By 1914 it had 117 ships with 710,000 tons. These were mostly lost in the First Great War or by confiscation for reparations. Reconstruction produced by 1930 187 vessels with 905,000 tons, including the Bremen and Europa. That year a 5 years' alliance was concluded with the Hamburg-America line, founded 1847. Seaworthy units were confiscated by the Allies after the Second Great War. See Bremen; Europa.

**Nordhausen.** Town of E. Germany in the *Land* of Saxony-Anhalt. It is situated in the fertile plain of the Goldene Aue. At one time a residence of the Emperors, it was a free city from 1253 to 1803, when it was absorbed into Prussia. It had remnants of the ancient fortifications. Industries have included engineering, chemical, tobacco, and textile manufactures. It also gave its name to Nordhausen, or fuming, sulphuric acid. During the Second Great War it was the site of a concentration camp. Captured April 11th, 1945, by the U.S. 1st army, after the war it was included in the Russian occupation zone. Pop. (pre-war), 37,000.

**Nordic.** Term used in a geographical and anthropological sense to describe the countries, people, and customs of the Scandinavian states of Sweden, Norway, Denmark, and Iceland. Nordics are fair and blue-eyed, and distinguished by their height and long heads; they are believed to have originally come from S. Russia. There is no Nordic race, but only a Nordic type, which makes up 70 p.c. of the Scandinavian population, 20 p.c. of Germans, Dutch, and British, and ten p.c. of the people of the U.S.A. The term Nordic is best known from a theory, developed in Germany, which became part of Hitler's philosophy.

The French Count Joseph de Gobineau (1816-1882) first propounded the fable of a Nordic race with superior courage and exceptional intellect. His theory was developed by the Germanised Englishman Houston Chamberlain and supported by Carlyle and Madison Grant. The Nordic race was supposed to have periodically come down into W. Europe from the N., and to have remained superior to the S. peoples in

courage, intelligence, and progressive thought.

In Germany the Nordic theory was enthusiastically supported; many Germans claimed that they themselves were Europe's purest Nordics. All great men in history, science, and art were considered to be Nordics. The civilization of ancient Greece was attributed to blond Nordics who conquered the country about 2,000 B.C., and the Indian, N. African, and Inca civilizations to the voyages of the Nordic Vikings.

Under Hitler the Nordic theory was carried to extreme lengths, and the Nazi faith claimed that it was the mission of German Nordics to govern other peoples. It became part of Nazi policy to select only Nordic types for official positions, and to encourage the breeding of Nordics by a system of marriage control among party members.

**Nordland.** Fylke or co. of Norway. It stretches for over 300 m., and has a breadth of less than 60 m. It includes in the N. the Lofoten Islands (*q.v.*), and the coast is fringed by islets, of which the chief group is the Vikten Islands in the S. The chief town is Bodø, on Salt Fjord. Area is 14,727 sq. m. Pop. 214,900.

**Nördlingen.** Town of Bavaria, Germany. It stands on the Eger, at a height of 1400 ft. 38 m. N.N.W. of Augsburg and 70 m. from Munich, and is an important rly. junction. It is one of the few remaining medieval towns, the walls of the ancient town still standing. Notable buildings include S. Saviour's church (1422), and a Gothic town hall (14th cent.).

Frederick II made it a free city of the Empire c. 1220, and during the 14th and 15th century it flourished as a member of the Saubian federation. During the Thirty Years' War it was the scene of two battles. In the first, 1634, the Swedish army, with its German auxiliaries, was routed by the Imperialists, and in the second, 1645, the French army of Turenne defeated the Imperialists. Nördlingen declined in importance and was incorporated in Bavaria. After May, 1945, it was in the U.S. occupation zone. Pop. est. 10,000.

**Nordstrand.** Island of Germany. It lies off the W. coast of Schleswig-Holstein, W. of Husum, with which it has steamer connexion. Its area is 20 sq. m.

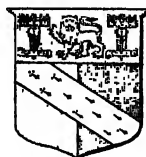
**Nord-Trøndelag.** Fylke or co. of Norway. It is centrally situated, with a small section of the Atlantic coast near the Vikten Islands.

Trondhjem Fjord extends almost half-way across the co. from the S.W.; Folden and Nansen Fjords are large indentations in the N.W. The rly. from Trondhjem reaches Stenkjaer. The chief town is Levanger. The area is 8,659 sq. m. Pop. 104,626.

**Nore, THE.** Sandbank in the Thames estuary, England. It is about 3 m. N.E. of Sheerness and 47 m. E. of London. At the E. extremity is the Nore lightship, anchored here since 1732. The Nore is generally regarded as marking the mouth of the Thames, and is an important anchorage. The naval mutiny at the Nore took place May 20 to June 13, 1797.

**Nore.** River of Eire. Rising in the N. of co. Tipperary, it flows 70 m. S.E. through co. Leix and co. Kilkenny to the Barrow, which it enters 2 m. above New Ross. The Nore is tidal to Inistioge, 10 m. from its mouth.

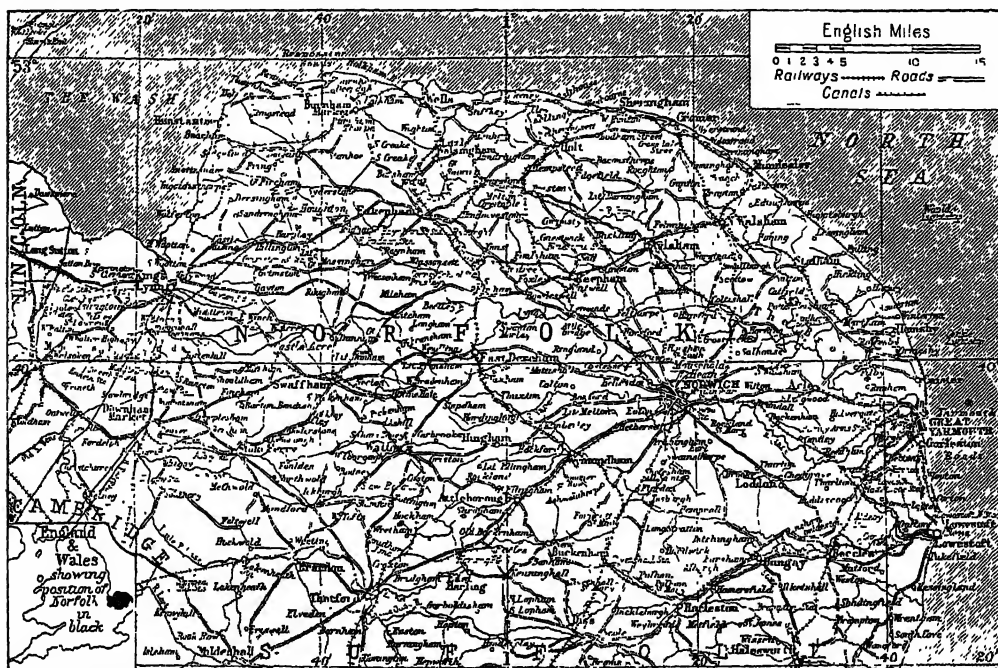
**Norfolk.** Eastern and maritime county of England, the fourth largest in the country. It has about



Norfolk arms

90 m. of coastline on the Wash and the North Sea, and an area of 2,054 sq. m. The surface in the interior is undulating or flat, the latter in the W., where the fen district enters the county, while along much of the coast it is quite low, and suffers in parts from the encroachments of the sea, as it does in the few places where cliffs fringe the shore. Along the Wash, however, some land has been reclaimed. The chief river is the Yare, with its tributaries, Wensum, Bure, and Waveney, which divides Norfolk from Suffolk. The Great Ouse and its tributaries also water the county, which contains the shallow lakes known as the Broads.

Norfolk is a noted agricultural county. Wheat, barley, and oats are largely grown; cattle and sheep are reared; and some land is given up to fruit. In the south of the county the forestry commissioners have planted a large forest. Fishing is an important industry, while oil shales are worked near King's Lynn. Norwich is the county town and the largest place. Other corporate towns are Yarmouth, King's Lynn, and Thetford, smaller places being East Dereham, North Walsham, Downham Market and Wymondham. Cromer, Sheringham, Mundesley, and Hunstanton on the



Norfolk. Map of the maritime county of East Anglia, noted for agricultural produce and cattle-raising

Wash, are watering-places. The county, which is mainly in the diocese of Norwich, elects six M.P.s (and two for Norwich).

Norfolk was part of E. Anglia, and soon after 1066 became one of the richest parts of England; this was due mainly to its sheep farming. Wealth increased when in the 12th century Flemings introduced the worsted manufacture. Woollens were also manufactured, and Norwich became one of the three greatest cities of the kingdom. There are ruins of castles at Castle Acre and Castle Rising. In the county are Sandringham, Houghton, Holkham, Paston, and Nelson's birthplace, Burnham Thorpe.

**LITERARY ASSOCIATIONS.** The Babes in the Wood are supposed to have been left to die in Wayland Wood, between Watton and Wymondham; and The Bailiff's Daughter of Islington belonged to the hamlet of that name near King's Lynn. The Paston Letters, with their intimate revelations of 15th century life, may be recalled at Caister, near Yarmouth, and elsewhere. Dickens placed notable scenes of David Copperfield at Yarmouth. Borrow wrote of Norwich and other Norfolk places in Lavengro. R. H. Mottram, a native, gives a Norwich setting to many of his books. See Broads.

**Bibliography.** Norfolk Broads and Rivers, G. C. Davies, 1884; History of Norfolk, W. Rye, 1885; Bygone Norfolk, W. Andrews, 1898; Victoria History, Norfolk, ed. H. A. Doubleday and W. Page, 1901; Norfolk, R. H. Mottram, 1946.

**Norfolk.** City of Virginia, U.S.A. in Norfolk co. It stands on the Elizabeth river, an arm of Chesapeake Bay, 68 m. S.E. of Richmond, and is served by the Chesapeake and Ohio and other rlys., and by steamship lines. Transport facilities are also provided by two canals. A big port and the second largest city of the state, Norfolk has a spacious harbour. Its U.S. navy yard is one of the two largest American naval bases, occupying 453 acres. The city has many industrial establishments. In 1939 it was beautified by the planting of thousands of azalea trees. Pop. 144,432.

**Norfolk, EARL AND DUKE OF.** English titles, the latter being the senior dukedom in the peerage. After the Conquest of 1066 the earldom of Norfolk was held by several nobles, including members of the family of Bigod. It passed through female descent from the Bigods to the Mowbrays. In 1397 Thomas Mowbray was created duke of Norfolk, and except for a short period his descendants held the title until 1476, when John, the 4th duke, died without sons.

John Mowbray's daughter Anne married Richard, younger son of Edward IV, and for two years that young prince was duke of Norfolk. In 1483 John Howard was created duke of Norfolk by Richard III, and the present title dates from that year. The Howards were descended through a female from Thomas Mowbray, the 1st duke. In 1572 the 4th duke was attainted and the title lapsed until 1660, when Thomas Howard, earl of Arundel, a descendant of the attainted duke, was restored to the dukedom by parliament. Many of the earlier earls and dukes of Norfolk had filled the office of earl marshal, and in 1672 this was made hereditary in the family. Since 1842 the surname Fitzalan has been prefixed to Howard. The principal seat of this leading R.C. family is Arundel Castle, and an eldest son is called earl of Arundel or earl of Surrey. See Arundel; Earl Marshal; Howard.

**Norfolk, JOHN HOWARD, 1ST DUKE OF** (c. 1430-85). English soldier. A kinsman of the Mowbray family, dukes of Norfolk, he fought in the Guienne campaign, 1453, and became knight of the shire for Norfolk, and sheriff under Edward IV, 1461. He fought against the Lancastrians, and though created Baron Howard by Henry VI, 1470, he remained faith-

ful to Edward, whom he accompanied to France, 1475, and acted as diplomatic representative, 1477-80. He was made duke of Norfolk and earl marshal by Richard III, 1483, and was killed at the battle of Bosworth. His title was attained by Henry VII, but a reversal was secured by his son Thomas, earl of Surrey, who became 2nd duke in 1514.

**Norfolk, THOMAS HOWARD, 3RD DUKE OF (1473-1554).** English soldier. Son of Thomas Howard,



Thomas Howard,  
3rd Duke of Norfolk  
After Holbein

2nd duke, he fought at Flodden, 1513, and became earl of Surrey on his father's restoration to the dukedom in 1514. He was lord-lieutenant of Ireland, 1520-21, raided the French coast, became lord treasurer, 1522, and as warden of the marches raised the Scots' siege of Wark Castle, 1523. He cruelly suppressed the Pilgrimage of Grace (*q.v.*), 1537-38, and commanded the English army sent against the Scots in 1542. His influence, however, waned before that of Hertford, and he was imprisoned 1546-53, but released by Mary. His attainder was reversed, and he died at Kenninghall, Norfolk, Aug. 25, 1554. The poet Surrey (*q.v.*) was a son.

**Norfolk, THOMAS HOWARD, 4TH DUKE OF (1536-72).** English politician. Born March 10 1536, son of the poet Surrey, he was taught by John Foxe, and succeeded to the dukedom in 1554. He represented Elizabeth in the Scottish negotiations, 1559-60 and in 1568. For planning



Thomas Howard,  
4th Duke of Norfolk  
After Holbein

a marriage with Mary Queen of Scots he was imprisoned by Elizabeth, 1569-70. Released on a promise of allegiance and renunciation of the marriage scheme, he was drawn into the Ridolfi plot, arrested in Oct., 1571, and, denying that he was a Roman Catholic, was executed as a traitor, Jan. 2, 1572.

**Norfolk, HENRY FITZALAN-HOWARD, 15TH DUKE OF (1847-1917).** British politician. Born Dec. 27, 1847, son of Henry Granville, 14th duke (1815-60), he was

educated at the Oratory school, Edgbaston. He was envoy for Victoria at the jubilee of Leo XIII,



Henry Fitzalan-  
Howard,  
15th Duke of Norfolk  
Russell

1887, and was postmaster-general, 1895-1900. Elected mayor of Sheffield in 1895, he was first chancellor of its university, and sat on the L.C.C., 1892-95. Active in all matters pertaining to the R.C. Church in Great Britain, he took part as earl marshal in the coronation ceremonies of Edward VII and George V, was lord-lieutenant of Sussex from 1905, and died Feb. 11, 1917.

**Norfolk, BERNARD MARMA- DUKE FITZALAN-HOWARD, 16TH DUKE OF (b. 1908).** British peer.

Son of the 15th duke, whom he was to succeed in 1917 as earl marshal, hereditary marshal, and chief butler of England, he was born May 30, 1908. As premier duke he played a leading part



Bernard Fitzalan-  
Howard,  
16th Duke of Norfolk

at the coronation of King George VI in 1937. Mayor of Arundel, 1935-36, he was joint parliamentary secretary to the ministry of agriculture, 1941-45. He married in 1937 Lavinia Strutt, daughter of Lord Belper. See Earl Marshal.

**Norfolk Island.** Islet in the Pacific within the territory of the Commonwealth of Australia. It is 5 m. long, 3 m. wide, and covers 13 sq. m. Discovered by Capt. Cook in 1774, it is 400 m. N.W. of New Zealand and 930 m. N.E. of Sydney. The climate is mild, the temperature averaging 68° F. with a range of 35° F.; the rainfall is 55 ins. annually. Bananas, lemons, guavas, pineapples, and passion fruit are grown, coffee is cultivated, and whaling is carried on. In 1856 the descendants of the mutineers of the *Bounty* were removed here from Pitcairn Island. Norfolk I. was handed over to Australia in 1914. Pop. 733.

**Norfolk Regiment, ROYAL.** Regiment of the British army. Raised in Gloucestershire in 1685 by Henry Cornwall, a captain in the Royal Horse Guards, for the suppression of the Monmouth rebellion, it came on to the estab-

lishment as the 9th (East Norfolk) Foot. It first saw active service under Marlborough in 1701. At the battle of Almanza, 1707, it covered the British withdrawal, its gallant conduct earning it the figure of Britannia as the regimental badge. The 9th Foot won its first battle honour, Havannah, in 1762 and added Martinique in 1794. It fought under Wellington in the Peninsula where, its badge being mistaken for a figure of the Virgin Mary, it derived its nickname of "The Holy Boys." The regiment provided the funeral party for Moore at Corunna, a fact commemorated by the black thread twined with the gold lace on full-dress tunics.

Thereafter the regiment served many years in India. It was in the Afghan War of 1842, the Sikh War, served throughout the Crimean War, and having returned to India, marched in 1879 with Roberts from Kabul to Kandahar. Its next active service was in the Burmese War of 1889. In the Boer War as part of the 7th division it was at the victory of Paardeburg. Twenty battalions were raised in the First Great War and earned the honours: Mons; Le Cateau; Marne, 1914; Ypres, 1914, '15, '17, '18; Somme, 1916 '18; Hindenburg Line; Suvla; Gaza; Shaiba; Kut-el-Amara. Moving to France with the B.E.F. in 1939, the Norfolks earned the first decorations awarded for gallantry, in the field in the Second Great War. Of a battalion drafted to Singapore, the survivors were taken prisoner when the island surrendered. Other battalions served in the Burma campaign, winning particular distinction at Kohima in 1944. The regimental depot is at Norwich.

**Norham.** Village of Northumberland, England. It stands on the Tweed, 6 m. S.W. of Berwick-on-Tweed, with a rly. station. Norham castle, one of the strongest defences of the English border, is mentioned in Marmion. Built by a bishop of Durham in the 12th cent., it is now a ruin, the chief feature being the Norman keep. The district around is known as Northamshire.

**Noric Alps (anc. *Alpes Noricae*).** Section of the E. Alps, between the valleys of the Mur and the Drave. The name was formerly applied to the whole area (Styria, Salzburg, Lower Austria, and part of Carinthia) included in the Roman prov. of Noricum. The highest peak is the Eisenhut, alt. 8,000 ft.







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